

SONY®

DIGITAL AUDIO RECORDER

PCM-7030



MAINTENANCE MANUAL

1st Edition (Revised 7)

Serial No. 20001 and Higher (UC)

Serial No. 50001 and Higher (EK)

WARNING

For the customers in U.S.A.

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

Important—To insure that the complete system (including this peripheral) is capable of complying with the FCC requirements, it is recommended that the user make sure that the individual equipment of the complete system has a label with one of the following statements.

"This equipment has been tested with a Class A Computing Device and has been found to comply with Part 15 of FCC rules."

—or—

"This equipment complies with the requirements in Part 15 of FCC rules for a Class A Computing Device."

—or equivalent.

The shielded interface cable recommended in this manual must be used with this equipment in order to comply with the limits for a computing device pursuant to Subpart J of Part 15 of FCC Rules.

For the customers in Canada

This apparatus complies with the Class A limits for radio noise emissions set out in Radio Interference Regulations.

Pour les utilisateurs au Canada

Cet appareil est conforme aux normes Classe A pour bruits radioélectriques, spécifiés dans le Règlement sur le brouillage radioélectrique.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

Check the metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 3.5 mA. Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 5.25 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 20 V AC range are suitable. (See Fig. A)

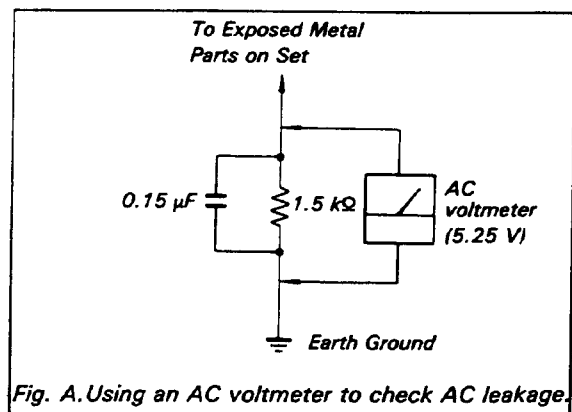


Fig. A. Using an AC voltmeter to check AC leakage.

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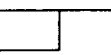
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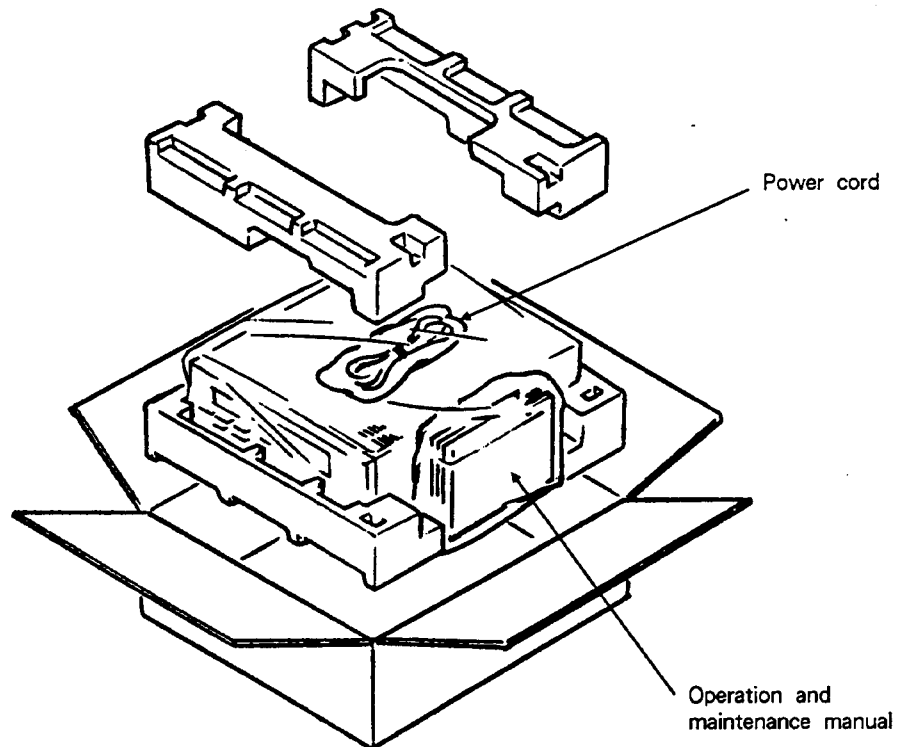
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SECTION 1 INSTALLATION

1-1. Packing



1-2. Installation Environment and Installation Space

Be sure to observe the following precautions including operation environment and installation space when you install the PCM-7030 Digital Audio Recorder.

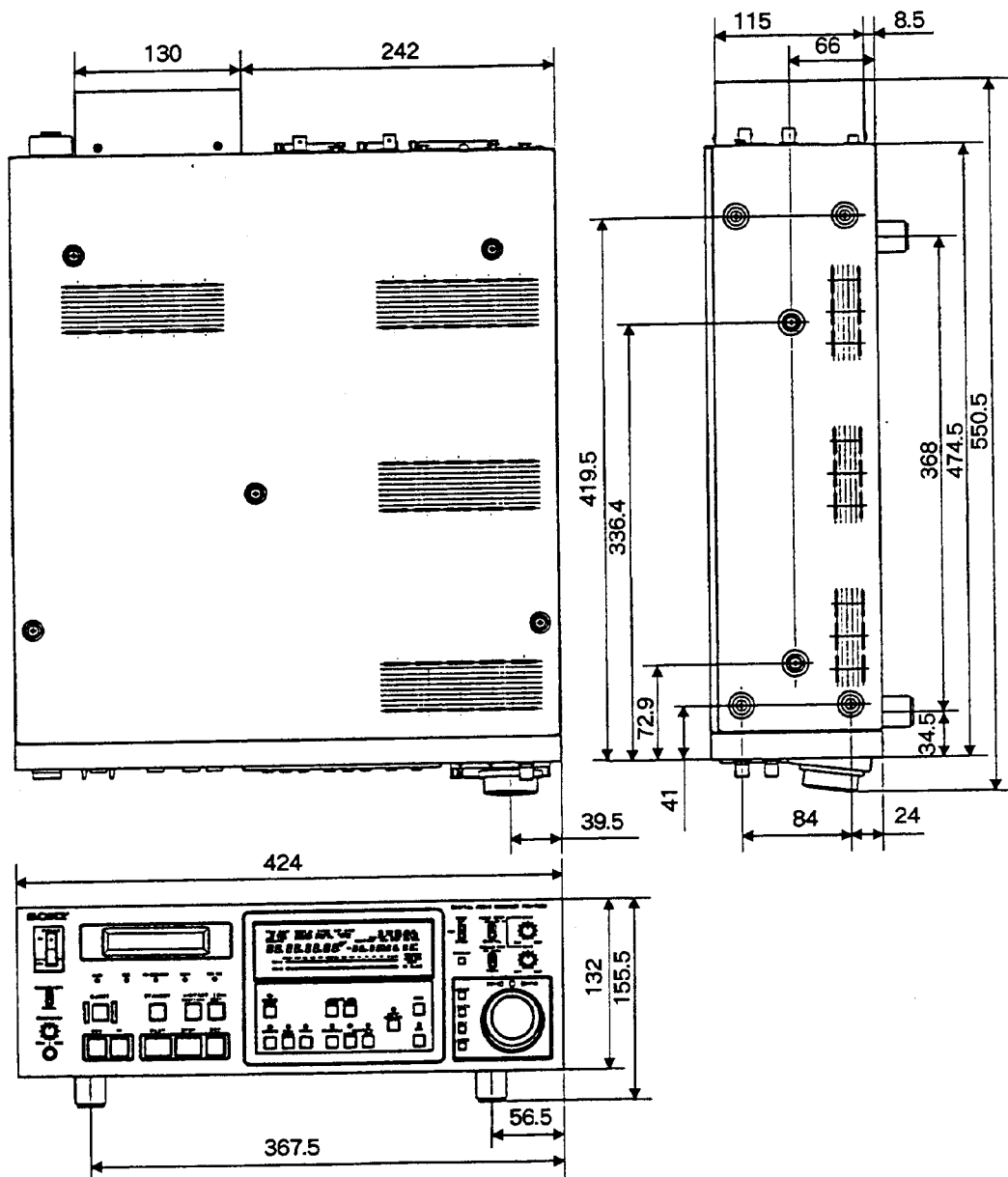
1-2-1. Operating environment

1. Do not install the unit in a place subject to direct sunlight or strong light, excessive dust, and frequent vibrations. Also do not install the unit near intense electric or magnetic fields.
2. Give consideration to the air circulation of the installation site to prevent the temperature of the inside unit from rising.
3. The operating temperature inside the unit is 5°C to 35°C (41°F to 95°F). Do not install the unit in a place near heat sources.

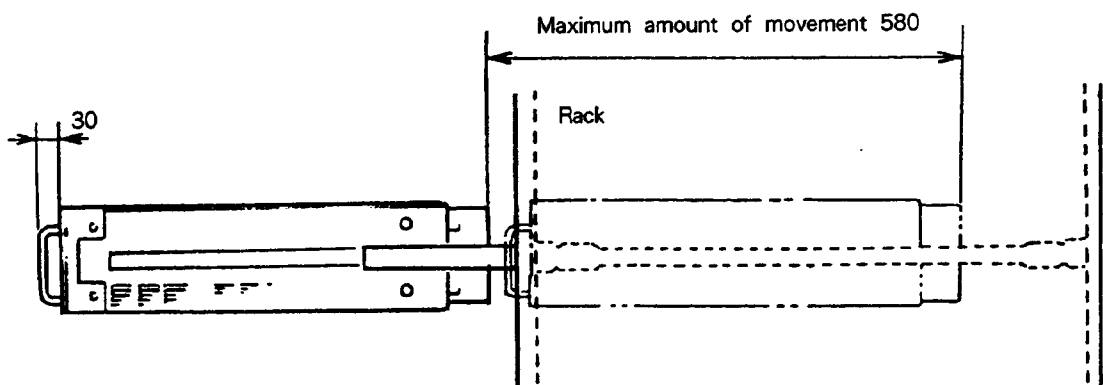
1-2-2. Installation space

1. The outside dimensions of the unit is given in the figure on next page.
2. Be sure to install the unit with a clearance of at least 40cm (15.75") between the wall and the rear surface of the unit for ventilation and easier maintenance.
3. When you use the unit on a desk, provide a clearance of at least 40cm (15.75") above the upper surface of the unit for easier maintenance of the printed circuit board. On the other hand, when you mount the unit on a rack, you can insert or remove the printed circuit board by drawing the unit forward. Therefore, you do not have to provide the clearance over the upper surface of the unit.

External dimensions



When mounted in a rack



unit : mm

1-3. Rack mounting method

The PCM-7030 can be used together with the EIA 19 inch standard rack.

It is recommended to use the rail and handles below to install it in the rack.

Rail : Rack mount rail RMM-30 (option)
suitable for a rack 660-830mm (26~33 3/4 inches) long.

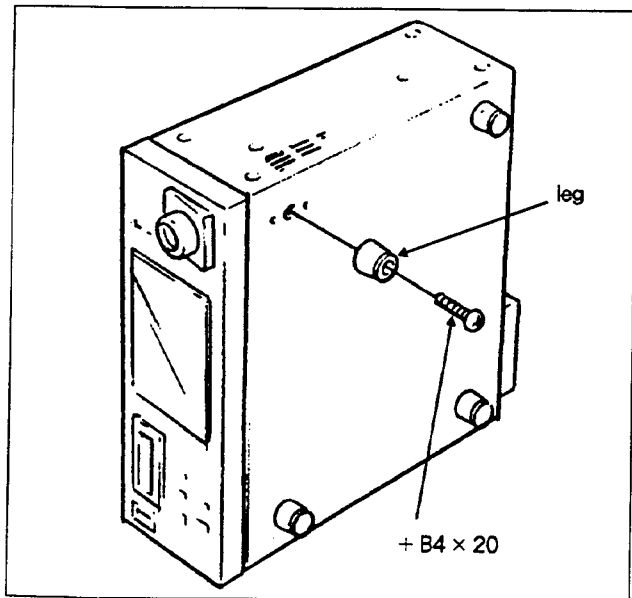
Handle : Rack mount adapter RMM-31 (option)

Note :

Please be sure to carry out the installation with two or more persons. If the PCM-7030 is not supported securely when being inserted onto the rack's rails, injury or damage can result.

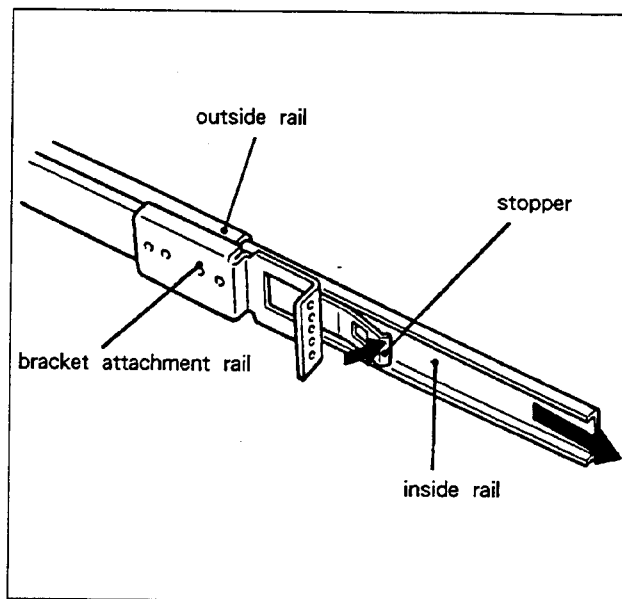
Preparation

Remove the four legs of the PCM-7030.

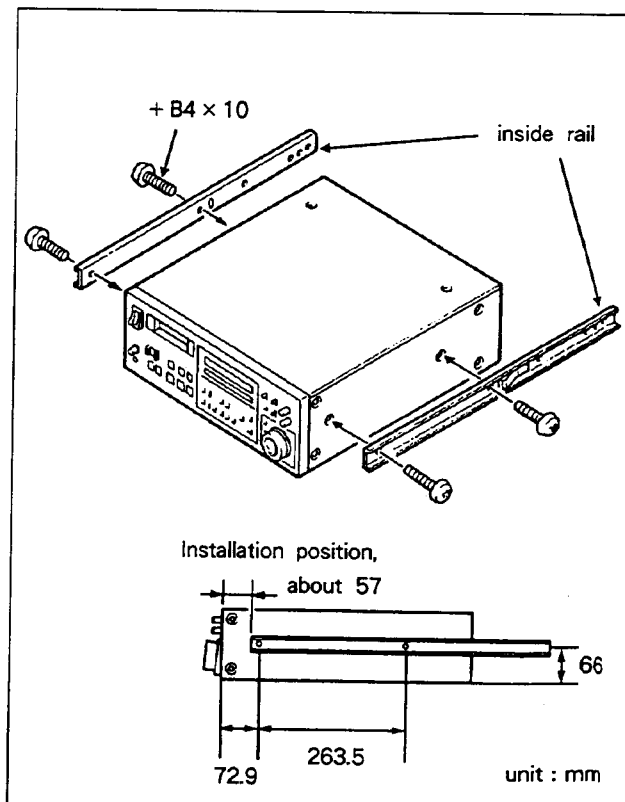


Rack mounting procedure (for RMM-30, RMM-31)

- (1) Remove the inside rail from the RMM-30 bracket attachment rail.



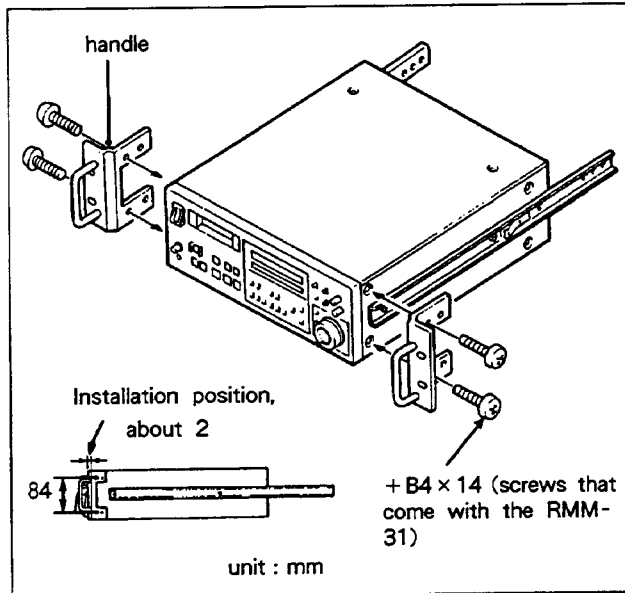
- (2) Remove the side panel screws of the PCM-7030 (+ B4 x 10, two places on the right and left respectively) and remove the inside rail as in the illustration. (Use the removed screws (+ B4 x 10) for the installation.)



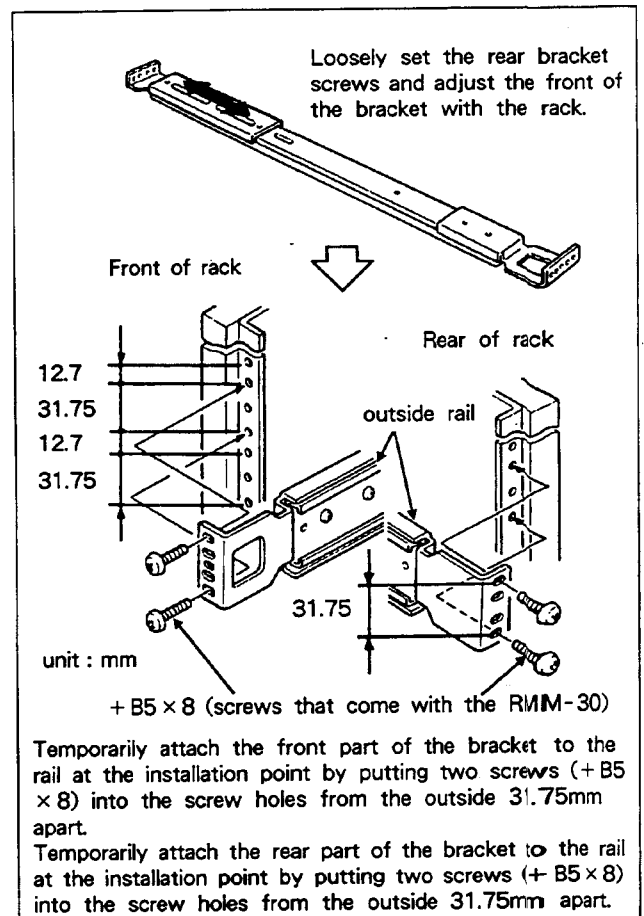
- (3) Remove the side panel screws (+B4×6) of the PCM-7030 and install the RMM-31 handles as illustrated.

(To install, use the screws (+B4×14) that come with the RMM-31.)

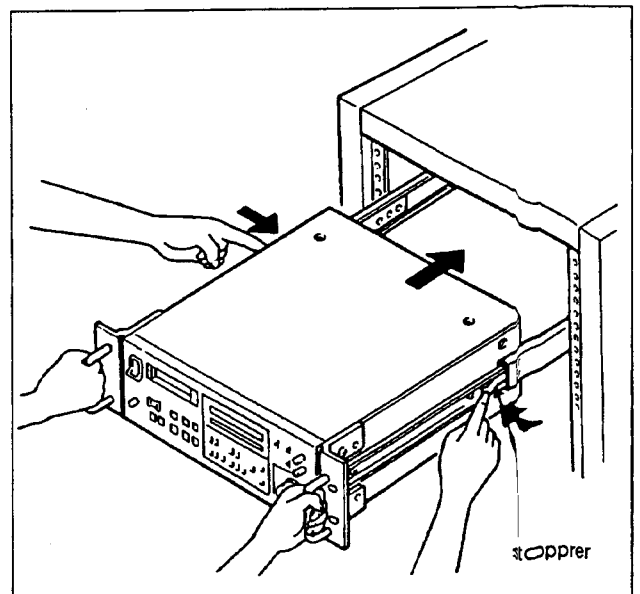
Note : Save the screws removed so they can be used later.



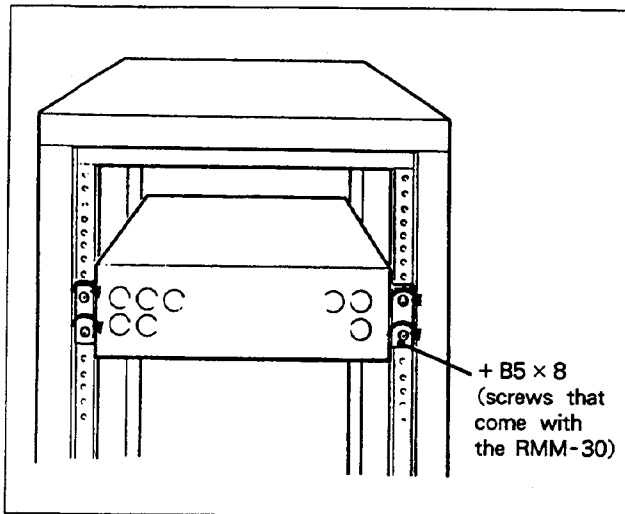
- (4) Temporarily attach the outside rail of the RMM-30 bracket attachment rail to the rack. (To install, use the screws (+B5×8) that come with the RMM-30.)



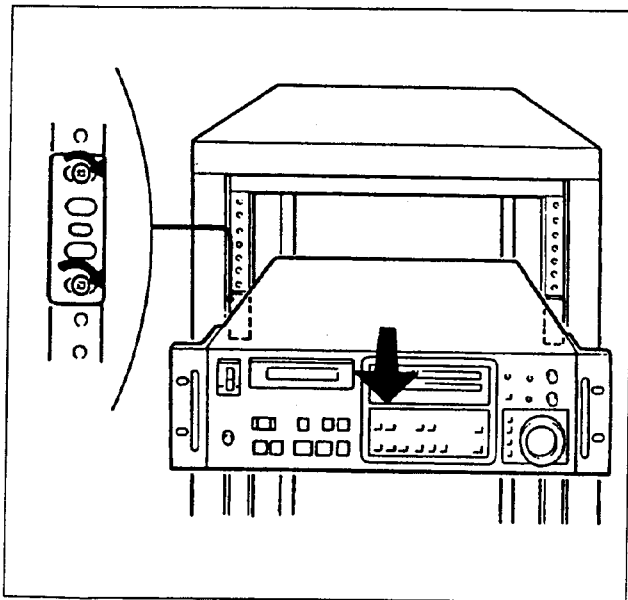
- (5) While pressing the stoppers on the inside rails, insert the PCM-7030 on the outside rails and push to the rear of the rack.



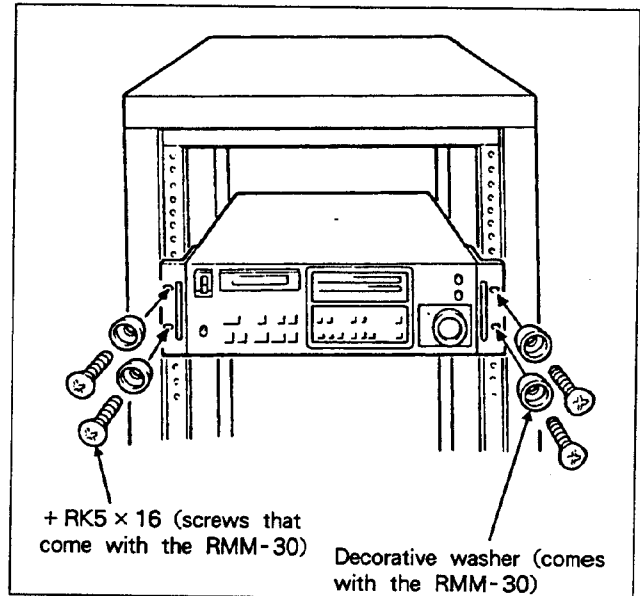
- (6) Firmly tighten the rear bracket screws.



- (7) Pull the PCM-7030 out about 20cm and firmly tighten the front bracket screws.



- (8) Push the PCM-7030 into the rack and attach the handles to the rack with the screws (+ RK5 × 16) and decorative washers that come with the RMM-30.



1-4. Installation of the DABK-7030, DABK-7031, DABK-7032 and DABK-7033

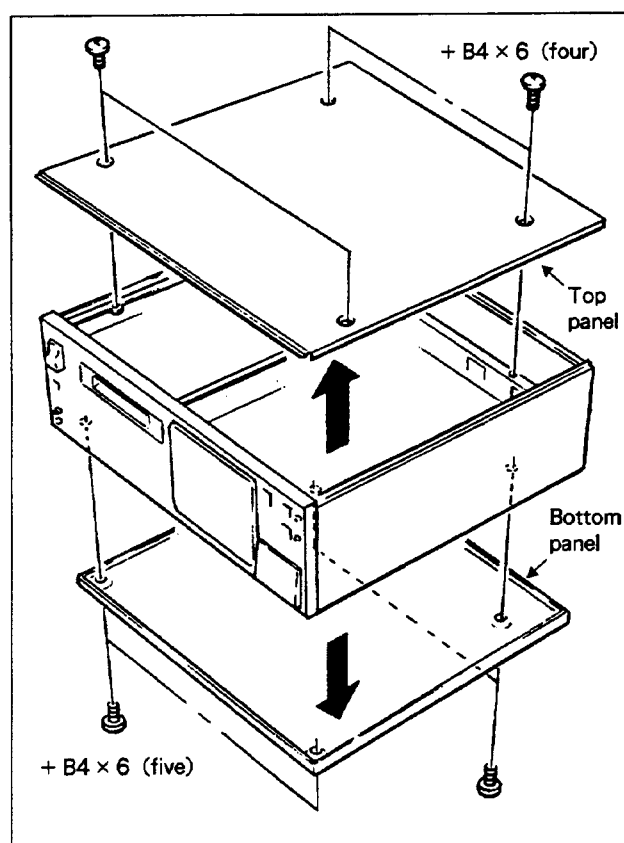
1-4-1. DABK-7030 Installation Procedure

The DABK-7030 comprises the following :

TC-58 (UC) or	
TC-58P (EK) board	: 1
TC panel	: 1
Screws (+ PWH3 × 6)	: 2
Nylon rivets	: 2
Flexible card cable (30P)	: 1

Initial preparation

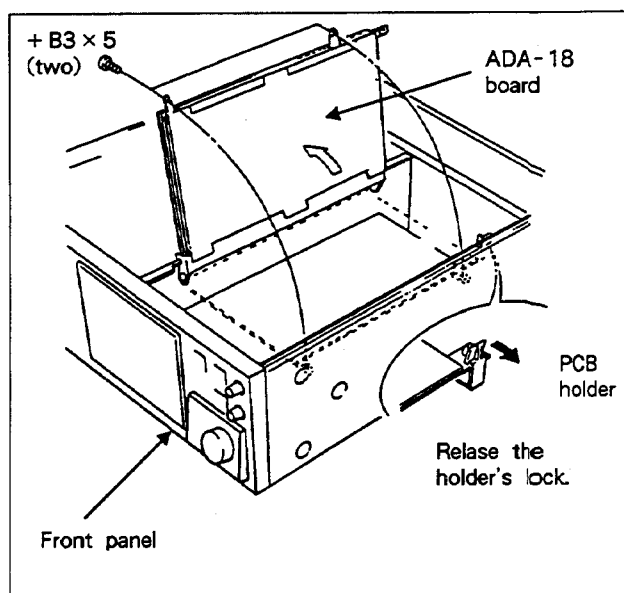
Remove the unit's top panel (secured by four + B4 × 6 screws) and the bottom panel (secured by five + B4 × 6 screws).



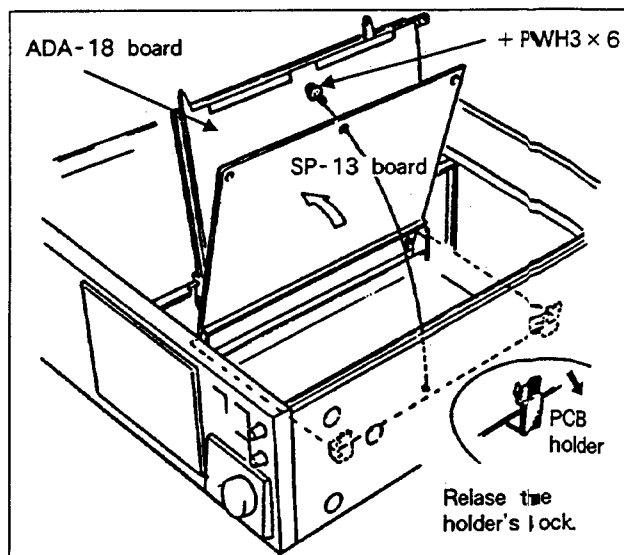
Note : Before installing the DABK-7030, turn off the unit's POWER switch.

1) Flexible card cable (30P) connection to the SY-155B board

- (1) Remove the ADA-18 board's two screws (+ B3 × 5).
- (2) Release the PCB holder's lock and open the ADA-18 board as shown by the arrow.

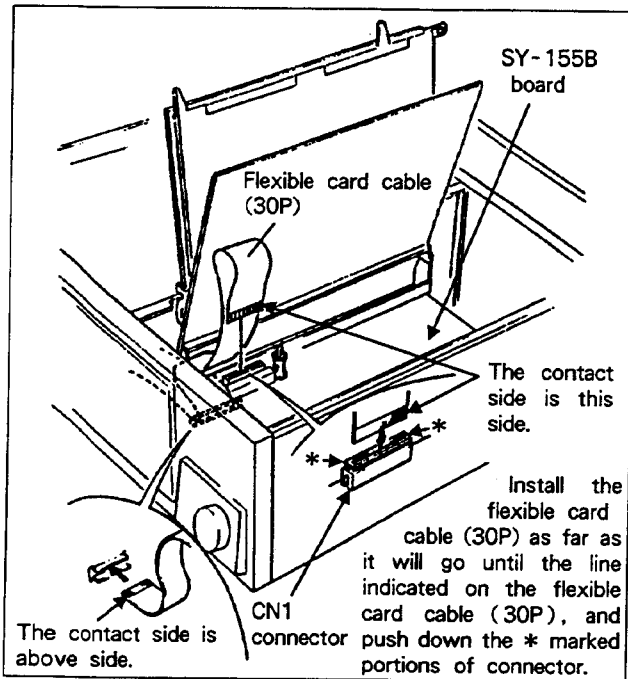


- (3) Remove the SP-13 board's screw (+ PWH3 × 6).
- (4) Release the PCB holder's locks and open the SP-13 board as shown by the arrow.

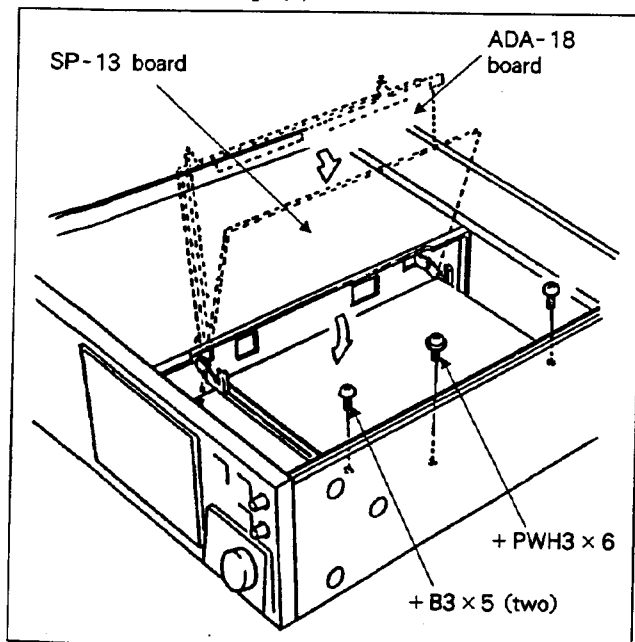


- (5) Insert the flexible card cable (30P) through the chassis hole. Keep inserting the cable until it locks into the CN1 connector on the SY-155B board.

Note: Take care to insert the flexible card of the contact/incontact side.

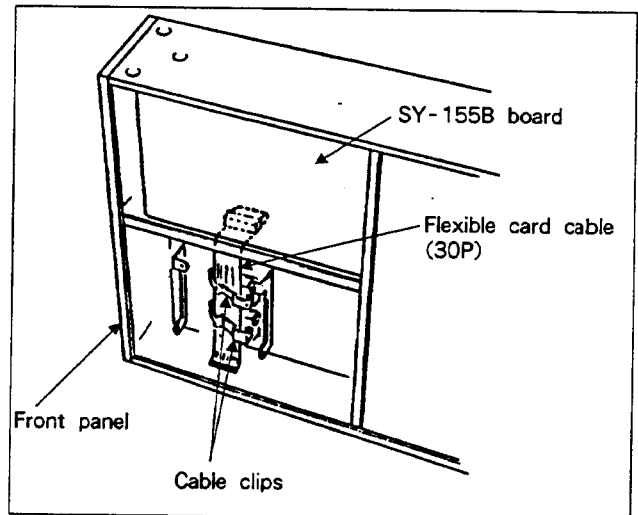


- (6) Close the SP-13 board until the two PCB holders lock. Then tighten the screw (+ PWH3 × 6) removed in step (3).
- (7) Close the ADA-18 board until the PCB holder locks. Then tighten the two screws (+ B3 × 5) removed in step (1).

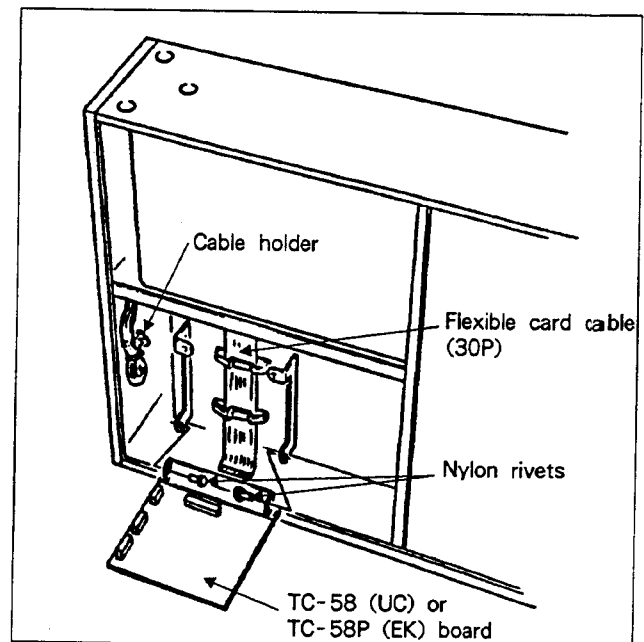


2) TC-58 (UC) or TC-58P (EK) board installation

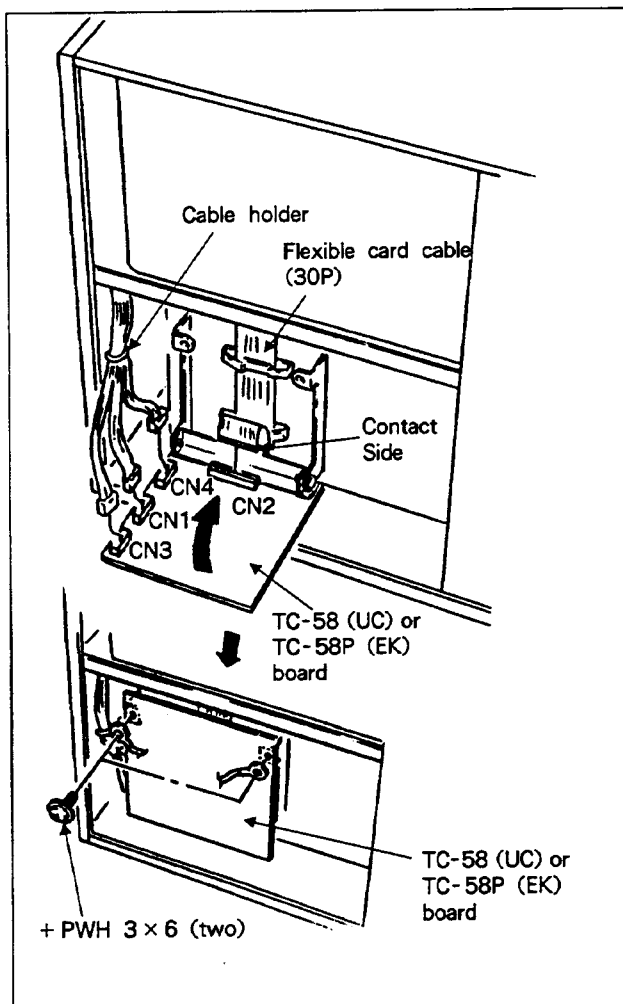
- (1) Lay the unit so that the bottom side is in front of you.
- (2) Secure the flexible card cable with the two cable clips.



- (3) Fasten the TC-58 (UC) or TC-58P (EK) board to the chassis with the two nylon rivets.

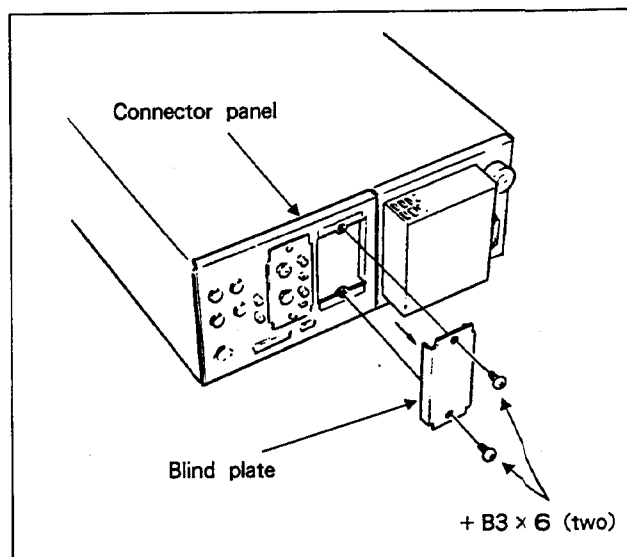


- (4) Connect the flexible card cable (30P) to the CN2 connector on the TC-58 (UC) or TC-58P (EK) board.
- (5) Connect the 4P, 5P, and 6P harnesses held by the cable holder to CN1 (5P), CN3 (4P), and CN4 (6P) respectively on the TC-58 (UC) or TC-58P (EK) board.
- (6) Close the TC-58 (UC) or TC-58P (EK) board as shown by the arrow.
- (7) Secure the TC-58 (UC) or TC-58P (EK) board to the chassis with the two screws (+ PWH3 × 6).

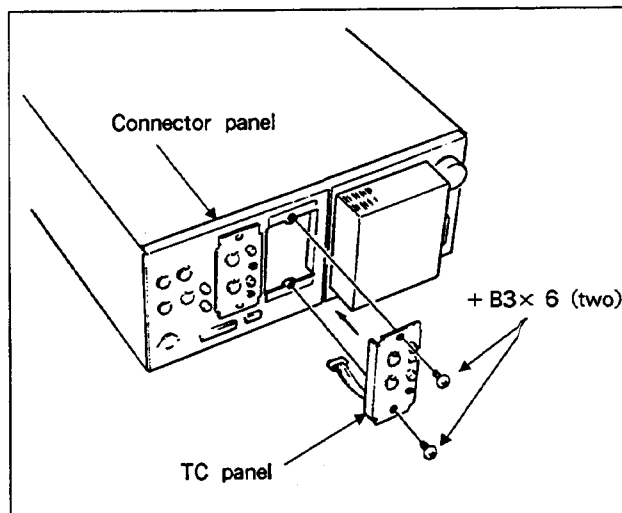


3) Installation of Connector Panel to TC Panel

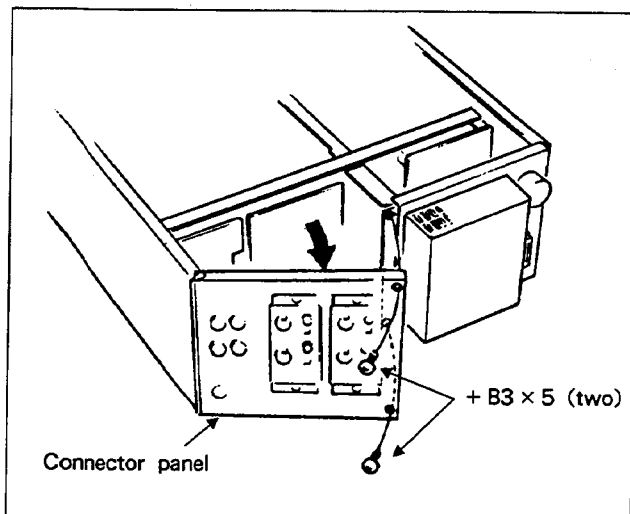
- (1) Remove the blind plate from the connector panel.



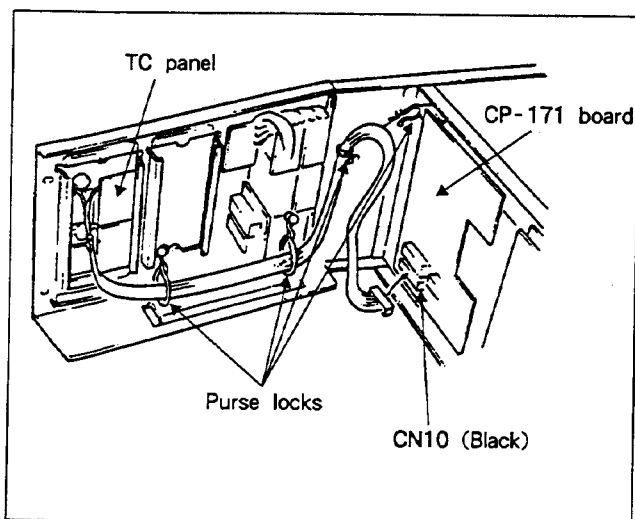
- (2) Install the TC panel on the connector panel (where the blind plate was removed) and secure it with the + B3 × 6 screws removed in step (1).



- (3) Remove the two connector panel screws (+ B3 × 5) and open the connector panel as shown by the arrow.



- (4) Connect the TC panel's harness to the CP-171 board's CN10 connector (black). Secure the harness with the four purse locks shown in the figure below.



- (5) Close the connector panel.
 (6) Fasten the connector panel to the chassis with the two + B3 × 5 screws removed in step (3).
 (7) Re-install the top panel (with the four + B4 × 6 screws) and bottom panel (with the five + B4 × 6 screws) on the unit.

4) Post-Installation Check

After installing the DABK-7030, do the following check.

1. Video synchronization signal input check

- (1) From the video synchronization signal generator, input the signal to the TC panel's REF VIDEO INPUT terminal.

Note: The unit's video synchronization signal frequency setting must match the input signal. Refer to the menu operation in the Operation Manual.

- (2) Set the TC panel's 75 ohm termination ON/OFF switch to ON.
 (3) Set the SYNC switch on the front panel to VIDEO.
 (4) Make sure the VIDEO display on the front panel's display is lit.
 (5) Then set the 75 ohm termination ON/OFF switch to OFF.

2. Time code I/O check

- (1) Connect the INPUT and OUTPUT terminals of the TIME CODE terminal on the TC panel.
 (2) Play the tape containing the time code.
 (3) Press the DISPLAY key on the front panel to display the EXT TIME CODE on the display's work area.
 (4) On the display, make sure the tape time area's time code display matches the work area's time code display.

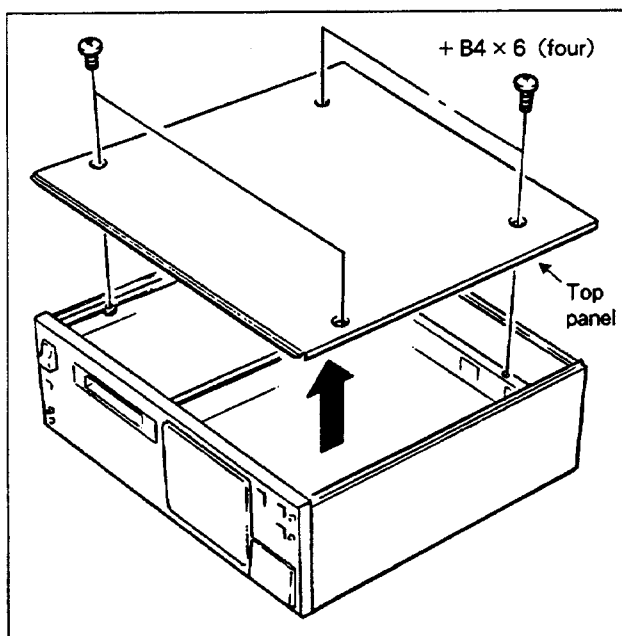
1-4-2. DABK-7031 Installation Procedure

The DABK-7031 comprises the following :

DIO-10 board	: 1
DIO panel	: 1
Screw (+ PWH3 × 6)	: 1

Initial preparation

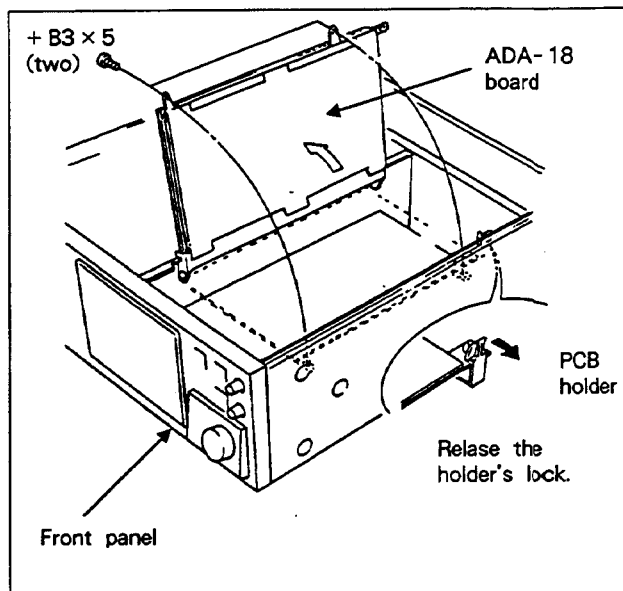
Remove the PCM-7030's top panel by removing the four +B4×6 screws. Remove the top panel as shown by the arrow.



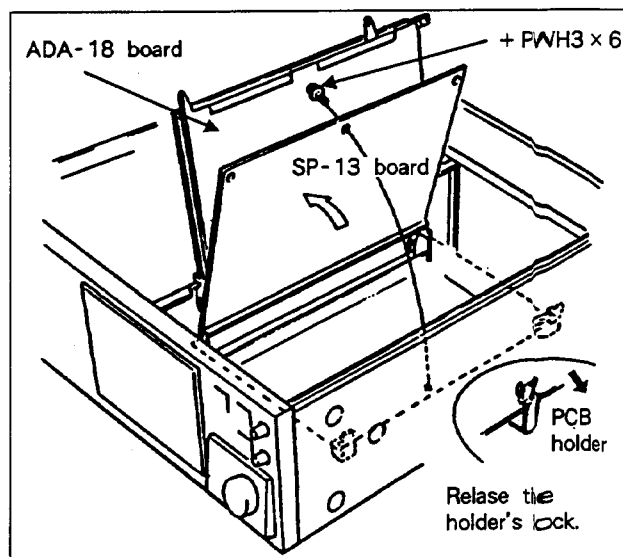
Note : Before installing the DABK-7031, turn off the unit's POWER switch.

1) Installation of DIO-10 board to SY-155B board

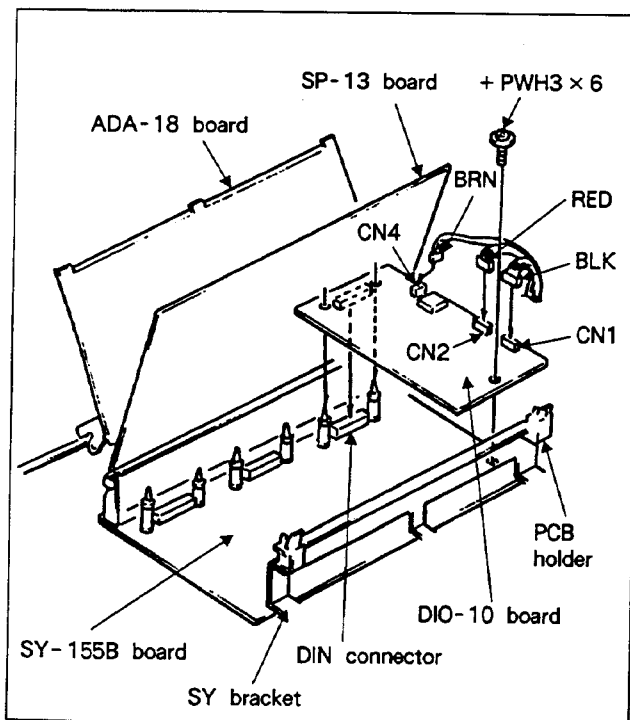
- (1) Remove the ADA-18 board's two +B3×5 screws.
- (2) Release the PCB holder's lock and open the ADA-18 board as shown by the arrow.



- (3) Remove the SP-13 board's screw (+ PWH3 × 6).
- (4) Release the PCB holders' locks and open the SP-13 board as shown by the arrow.



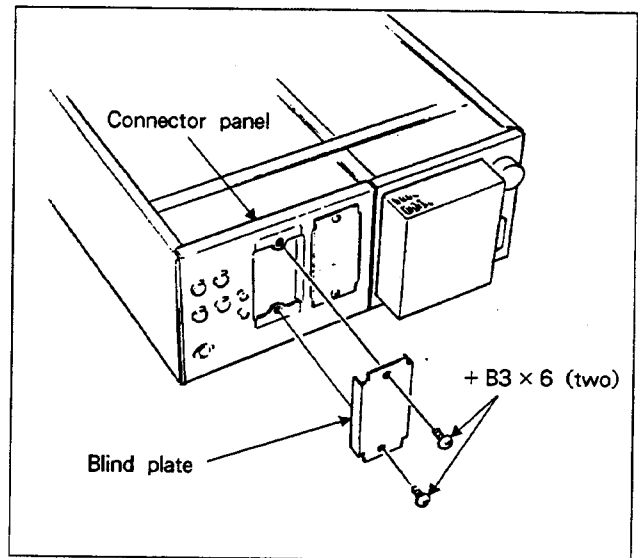
- (5) Insert the DIO-10 board's DIN connector into the SY-155 (B) board's DIN connector. Insert the DIO-10 board until the SY-155B SY bracket supporters lock in place.
- (6) Use the +PWH3×6 screw to fasten the DIO-10 board to the SY-155B board's SY bracket.
- (7) Connect the harnesses (held by the cable holder on the chassis) to the CN1 (black), CN2 (red), and CN4 (brown) connectors on the DIO-10 board. The color of the harness must match the color of the respective connector.



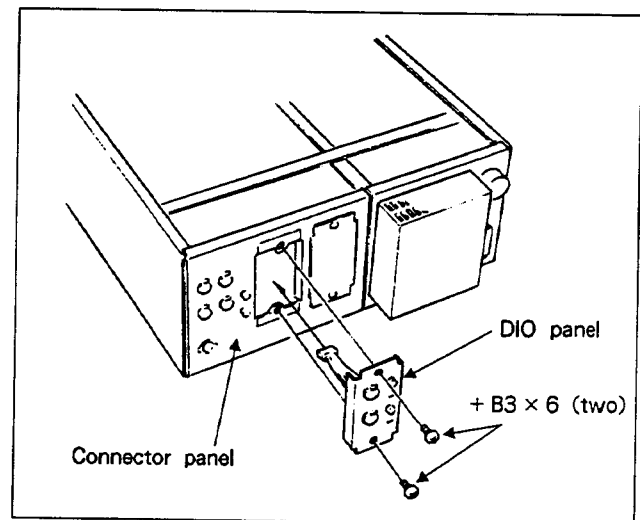
- (8) Close the SP-13 board until the two PCB holders lock.
- (9) Fasten the SP-13 board to the SY bracket with the +PWH3×6 screw that was removed in step (3).
- (10) Close the ADA-18 board until the PCB holder locks.
- (11) Fasten the ADA-18 board to the chassis with the two +B3×5 screws that were removed in step (1).

2) Installation of DIO panel to Connector panel

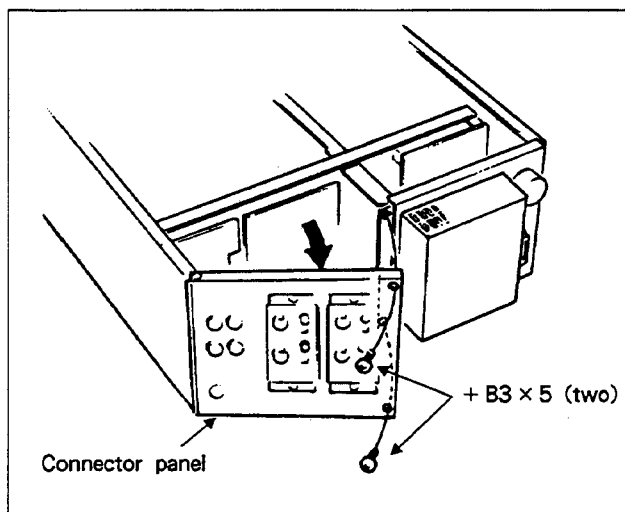
- (1) Remove the blind plate.



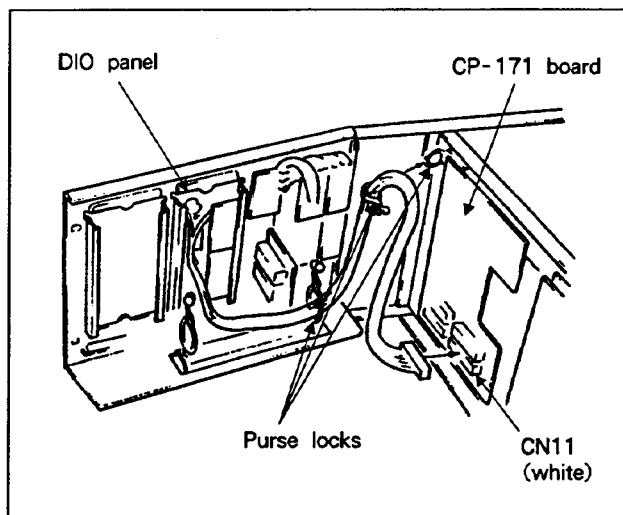
- (2) Install the DIO panel on the connector panel (where the blind plate was removed) with the +B3×6 screws removed in step (1).



- (3) Remove the two + B3 × 5 screws and open the connector panel as shown by the arrow.



- (4) Connect the DIO panel assembly harness to the CN11 connector (white) on the CP-171 board. Insert the harness through the three purse locks shown below.



- (5) Close the connector panel and secure it to the chassis with the two + B3 × 5 screws removed in step (3).
 (6) Re-install the top panel on the unit with the four + B4 × 6 screws.

3) Post-Installation check

After installing the DABK-7031, do the following check.

WORD synchronization signal input check

- (1) From the device having the WORD synchronization signal output, input the signal to the DIO panel's WORD SYNC INPUT terminal.

Note : The unit's sampling frequency setting must match the frequency of the synchronization signal that is input.

- (2) On the DIO panel, set the 75 ohm termination switch to ON and set the EXT SYNC switch to WORD.
 (3) On the front panel, set the SYNC switch to EXT.
 (4) Check if the EXT SYNC display is lit on the display.
 (5) After the above check, set the SYNC switch on the front panel and the 75 ohm termination switch and EXT SYNC switch on the DIO panel as follows :

SYNC switch	: INT
75 ohm termination switch	: OFF
EXT SYNC switch	: D-I

WORD synchronization signal output check

- (1) Connect an oscilloscope or a frequency counter to the WARD SYNC OUTPUT terminal on the DIO panel.
- (2) Check if the stipulated waveform or frequency is being output.

DIGITAL AUDIO signal I/O check

- (1) Input the digital signal to the DIGITAL INPUT terminal on the DIO panel.
- (2) On the front panel, set the AUDIO INPUT switch to DIGITAL and turn on the INPUT MONITOR switch.
- (3) Check if the level meter on the display moves in accordance with the input signal.
- (4) Turn off the INPUT MONITOR switch on the front panel.
- (5) Connect the device having the digital signal input to the DIGITAL OUTPUT terminal on the DIO panel.
- (6) Play a pre-recorded tape (music, etc.) to check if the signal is being input to the device in step (5).

1-4-3. DABK-7032 Installation Procedure

The DABK-7032 comprises the following :

MEM-40B board	: 1
Screw (+ PWH3 × 6)	: 1

Initial preparation

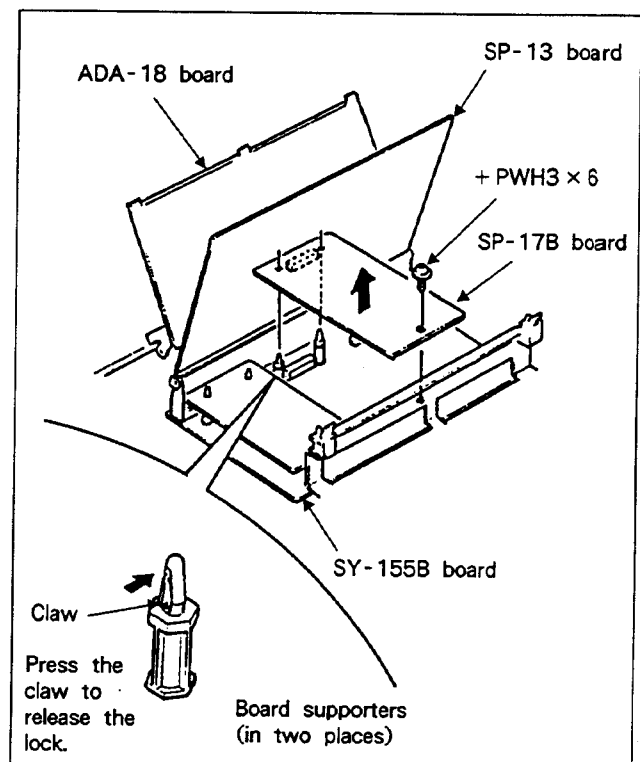
Remove the unit's top panel.

(Refer to the 1-4-1. DABK-7031 installation procedure.)

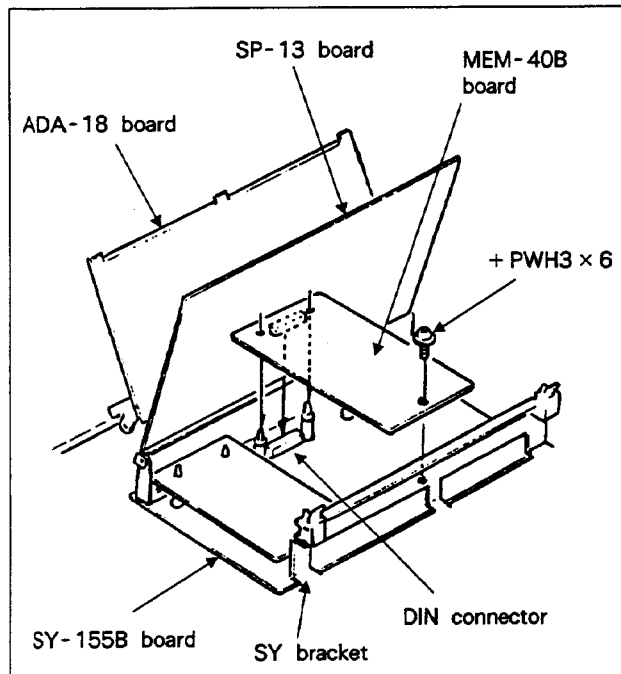
Note : Before installing the DABK-7032, turn off the unit's POWER switch.

1) Installation of MEM-40B board to SY-155B board

- (1) Open the ADA-18 board and the SP-13 board.
(Refer to the 1-4-1. DABK-7031 installation procedure.)
- (2) Remove the SP-17C board from the SY-155B board. (The board supporters are located in two places. One + PWH3 × 6 screw.)



- (3) Insert the MEM-40B board's DIN connector into the SY-155B board's DIN connector. Insert the MEM-40B board until the SY-155B board's board supporters lock.
- (4) Fasten the MEM-40B board to the SY-155B board's SY bracket with the + PWH3 × 6 screw.



- (5) Close the SP-13 board and ADA-18 board. (Refer to "1-4-1. DABK-7031 Installation Procedure.")
- (6) Install the top panel on the unit with the four + B4 × 6 screws.

2) Post-Installation check

After installing the DABK-7032, do the following check.

- (1) Open the SERVICE menu. (Simultaneously press the STOP, DISPLAY, and SET keys on the front panel.)
- (2) Open the TEST menu.
 - ① While pressing the MENU key, turn the dial counterclockwise to display the following:
[tEst] cLoSE
 - ② While pressing the DATA key, turn the dial until "oPeN" is displayed. Then press the SET key.
 - ③ While pressing the MENU key, turn the dial clockwise to display the following:
[iS_Ed] cLoSE
 - ④ While pressing the DATA key, turn the dial until "oPeN" is displayed. Then press the SET key.
- (3) While pressing the MENU key, turn the dial clockwise to display the following:
inStAnt tEst
- (4) Press the SET key and check if "noError" is displayed about 20 seconds later.
- (5) Close the SERVICE menu. (Simultaneously press the STOP, DISPLAY, and RESET keys)

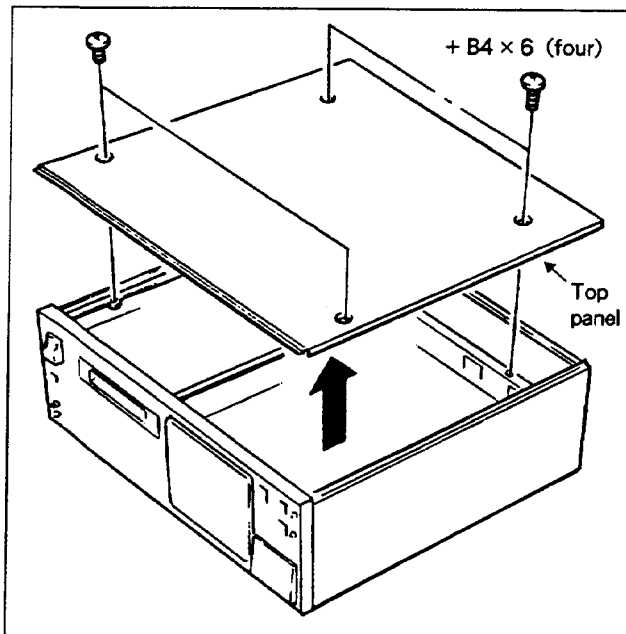
1-4-4. DABK-7033 Installation Procedure

The DABK-7033 comprises the following :

IF-283 board	: 1
Board supporter	: 3
Harness with D-SUB connector	: 1
D-SUB connector screws	: 2
ROM	: 2
Sample Disk	: 1

Initial preparation

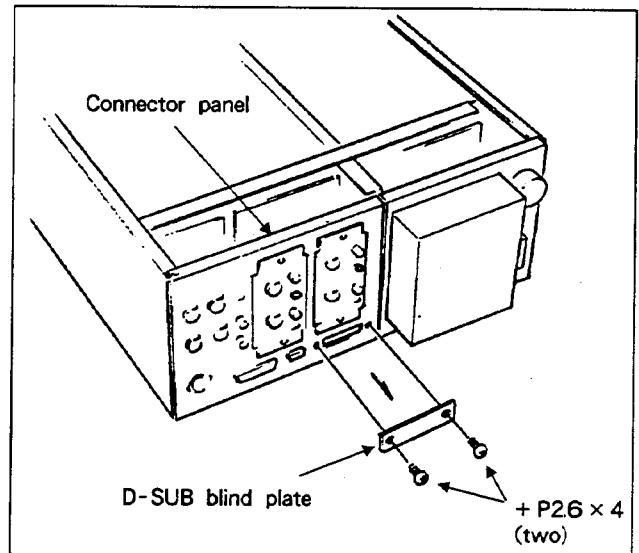
Remove the top panel by removing the four + B4 × 6 screws. Remove the top panel as shown by the arrow.



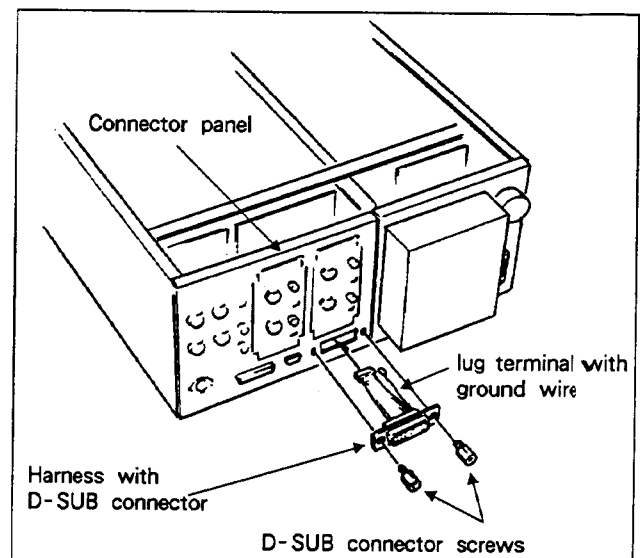
Note : Before installing the DABK-7033, turn off the unit's POWER switch.

1) Installation of Harness with D - SUB connector to the connector panel

(1) Remove the D - SUB blind plate from the connector panel.

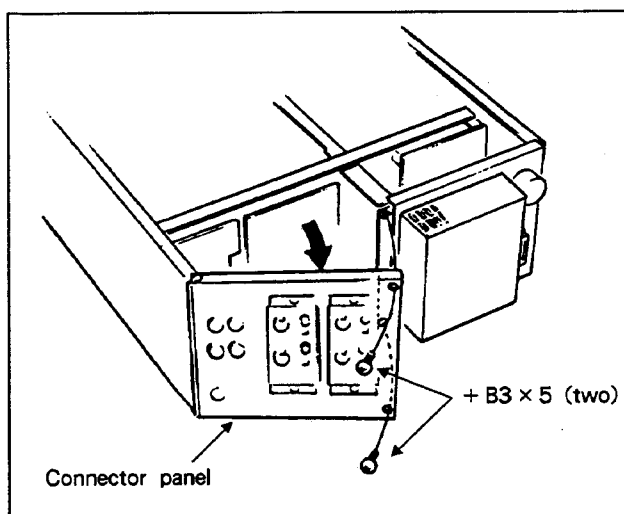


(2) Install the harness with D-SUB connector on the connector panel (where the D-SUB blind plate was removed) with the two D-SUB connector screws.

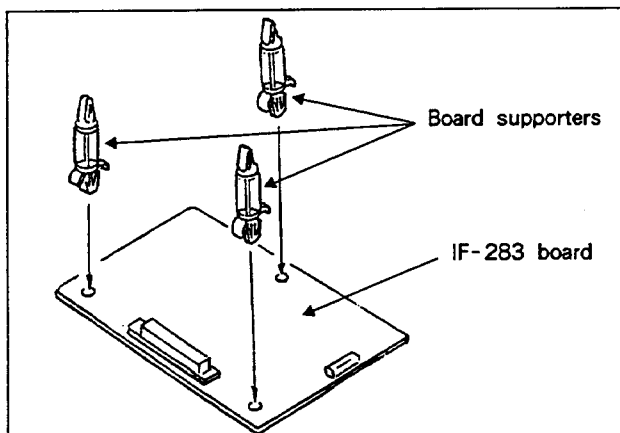


2) IF-283 board installation on the RM-77 board

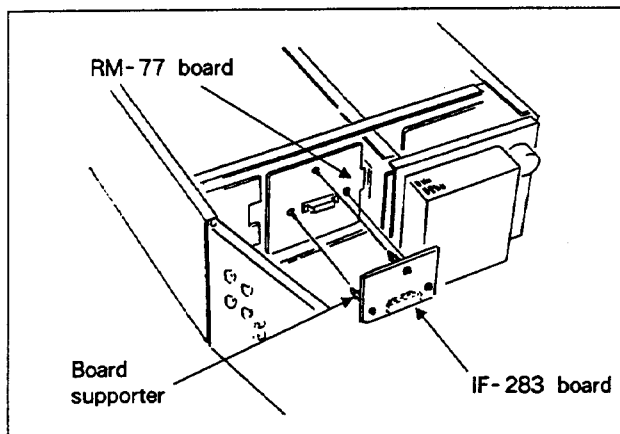
- (1) Remove the two +B3×5 screws and open the connector panel as shown by the arrow.



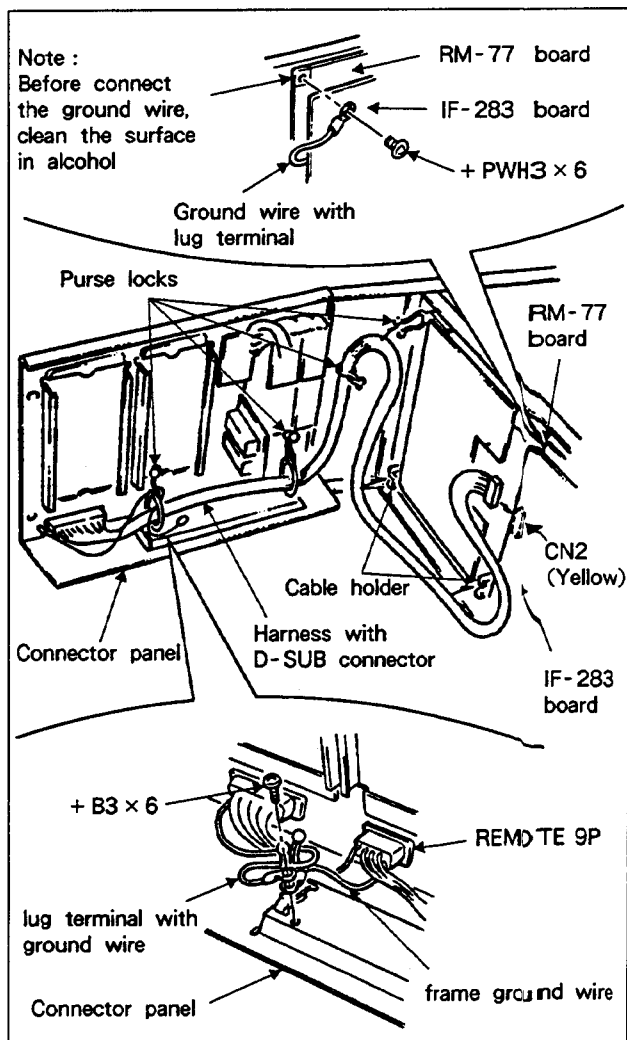
- (2) Insert the three board supporters into the IF-283 board as shown in the figure below.



- (3) Mount the IF-283 board to the RM-77 board and push it in until the board supporters lock.



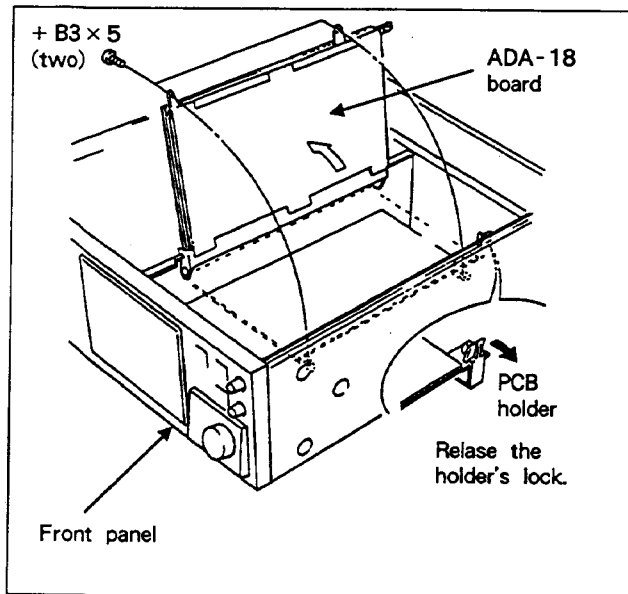
- (4) Connect the harness with D-SUB connector to the IF-283 board's CN2 connector (yellow). Connect the harness by securing it with the four purse locks.
- (5) Remove the screw (+PWH3×6) that the stopping on the RM-77 board (A Side board address A-1) and install the harness together with the ground wire with the lug terminal provided with the IF-238 board.
- (6) Remove the screw (+B3×6) holding the frame ground wire of the D-SUB 9 pin (REMOTE 9P). Secure the lug terminal with ground wire of the harness with the D-SUB connector with a purse lock, and install it together with the removed frame ground wire with a screw (+B3×6).



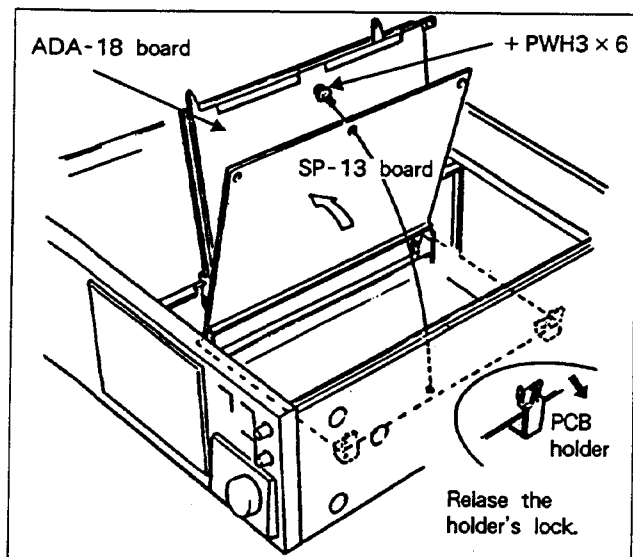
- (7) Close the connector panel.
- (8) Fasten the connector panel to the chassis with the two +B3×5 screws removed in step (1).

3) ROM Replacement

- (1) Remove the ADA-18 board's two +B3×5 screws.
- (2) Release the PCB holder's lock and open the ADA-18 board as shown by the arrow.



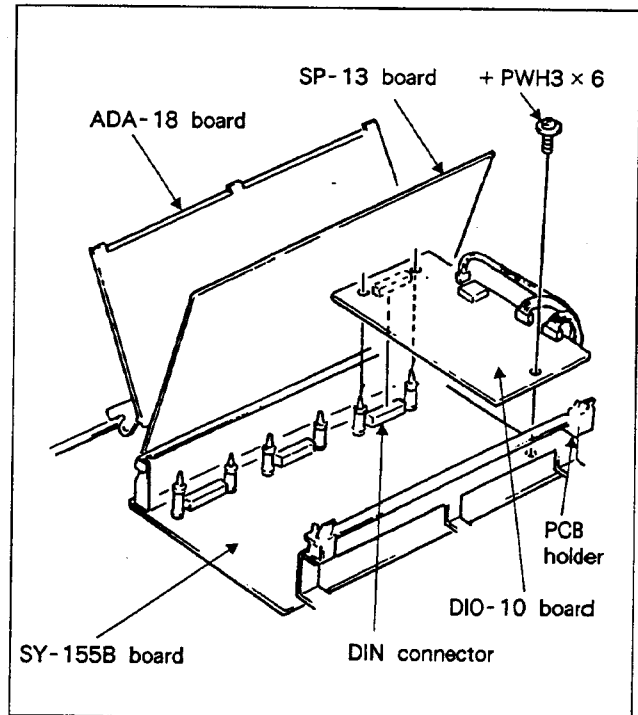
- (3) Remove the SP-13 board's screw (+ PWH3 × 6).
- (4) Release the PCB holders' locks and open the SP-13 board as shown by the arrow.



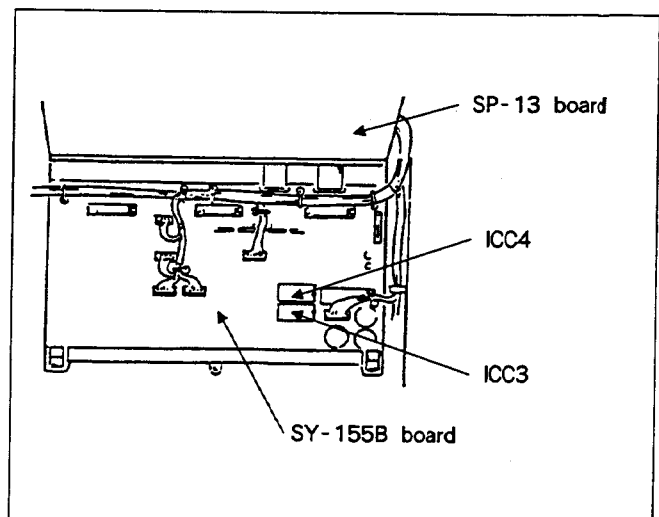
- (5) Remove the DIO-10 board from the SY-155B board.

Note :

Do this when the PCM-7030 is equipped with the DABK-7031 (optional).



- (6) Remove the ROM SYC3V *.* (board address C-3) on the SY-155B board and install the ROM (IFC3V *.*) that goes with the DABK-7033.
- (7) Remove the ROM SYC4V *.* (board address C-4) on the SY-155B board and install the ROM (IFC4V *.*) that goes with the DABK-7033.



- (8) Install the DIO-10 board on the SY-155B board.

Note :

Do this when the PCM-7030 is equipped with the DABK-7031 (optional).

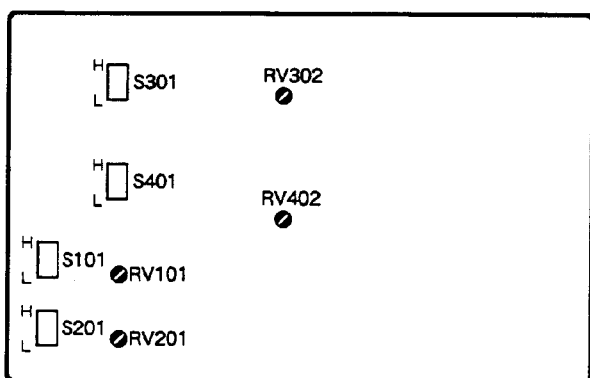
- (9) Close the SP-13 board until the two PCB holders lock.
- (10) Fasten the SP-13 board to the board guide with the +PWH3×6 screw that was removed in step (3).
- (11) Close the ADA-18 board until the PCB holder locks.
- (12) Fasten the ADA-18 board to the chassis with the two +B3×5 screws that were removed in step (1).
- (13) Install the top cover on the unit with the four +B4×6 screws.

1-5. Initial Settings of the Board's Switches and Volumes

The switch and volume settings required for level schedule changes (ADA-18 board) and fader start/stop procedure changes (RM-77 board) are described below.

Note: Do not touch any switches and volumes other than those specified below.

1-5-1. Level schedule change (ADA-18 board)



ADA-18 BOARD
COMPONENT SIDE
BOARD No. 1-637-267-11

- (1) If the standard signal level used is small (around -20dBs), do the following:

Switchover the S101, S201, S301, and S401 switches in correspondence to the analog audio I/O signal's standard signal level.

This is to be used if the standard level is set low, at around -20dBs.

If all the switches are set to H, the +4dBs input signal will be displayed as -20dB on the level meter. (Setting upon factory shipment.)

If all the switches are set to L, the -20dBs input signal will be displayed as -20dB on the level meter.

(2) Level schedule change

Upon factory shipment, the RV101, RV201, RV301, and RV401 volumes are set to the level schedule (+4dBs input → 20dB display → 4dBs output).

To change the above volumes' level schedule, adjust the volumes as described below.

First set the ANALOG AUDIO INPUT level adjustment knob (CH1 and CH2 on the front panel) to the center position.

RV101 and RV201 input level adjustment

For RV101, adjust the CH1 input level. When it is turned clockwise, the level will increase.

For RV201, adjust the CH2 input level. When it is turned clockwise, the level will increase.

The level setting (+4dBs = -20dB) upon factory shipment has a variable range of +8/-14dB for RV101 and RV201.

RV302 and RV402 output level adjustment

For RV302, adjust the CH1 output level. When it is turned clockwise, the level will increase.

For RV402, adjust the CH2 output level. When it is turned clockwise, the level will increase.

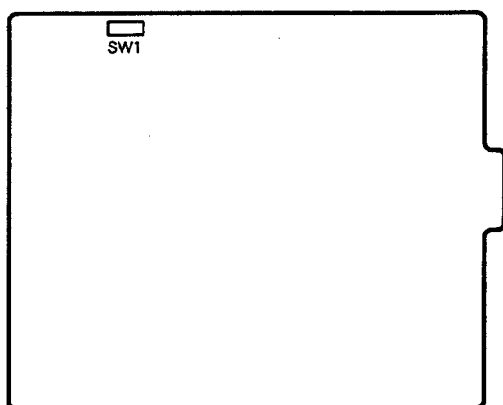
The level setting (-20dB = +4dBs) upon factory shipment has a variable range of +4/-12dB.

1-5-2. Fader Start/Stop Change Procedure (RM-77 Board)

The following two methods can be used for tape transport control with the fader :

1. Start the tape transport by raising the fader and stop it with the STOP key.Or, start the tape transport with the START key and stop it with the STOP key.
2. Start the tape transport by raising the fader and stop it by lowering the fader.

Select one of the above methods with SW1.



RM-77 BOARD
COMPONENT SIDE
BOARD No. 1-637-272-11

Setting upon factory shipment : The start and stop are independent.

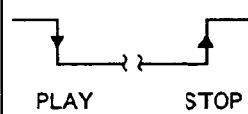
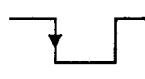


Pin 1 of the 8-pin remote terminal is dedicated to the PLAY command.The fader start can be done with an external fader (mixer).Pin 2 is dedicated to the STOP command.

When the switch is set, the setting will apply to both start and stop.



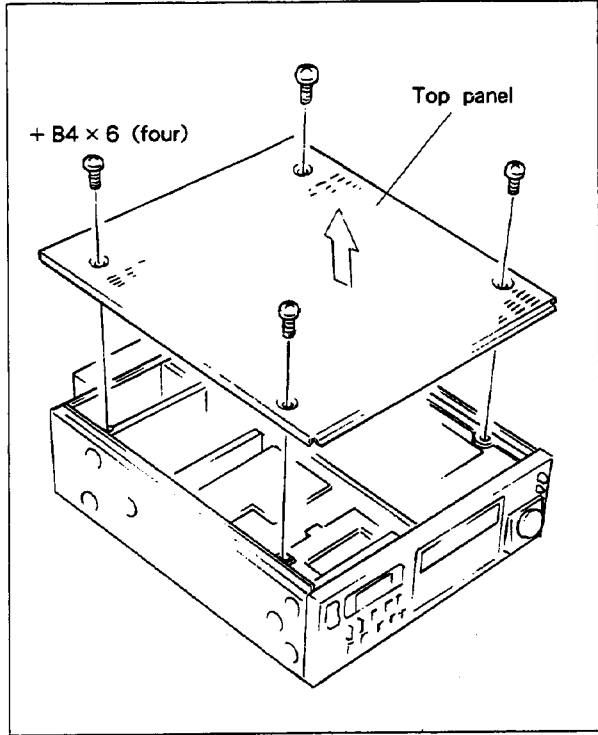
From pin 1 of the 8-pin remote terminal, the PLAY and STOP commands will be input alternately.This allows an external fader (mixer) to perform fader start and fader stop.The signal from of the 8-pin remote terminal's pin 1 will thereby change as follows :

8-pin remote terminal	 SW1	 SW1
pin 1	 PLAY	 PLAY STOP
pin 2	 STOP	

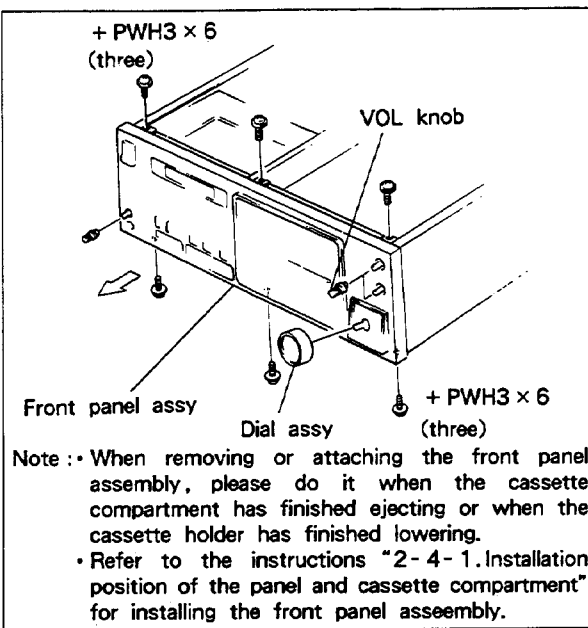
SECTION 2 SERVICE INFORMATION

2-1. Removal of Boards and Major Mechanical Parts

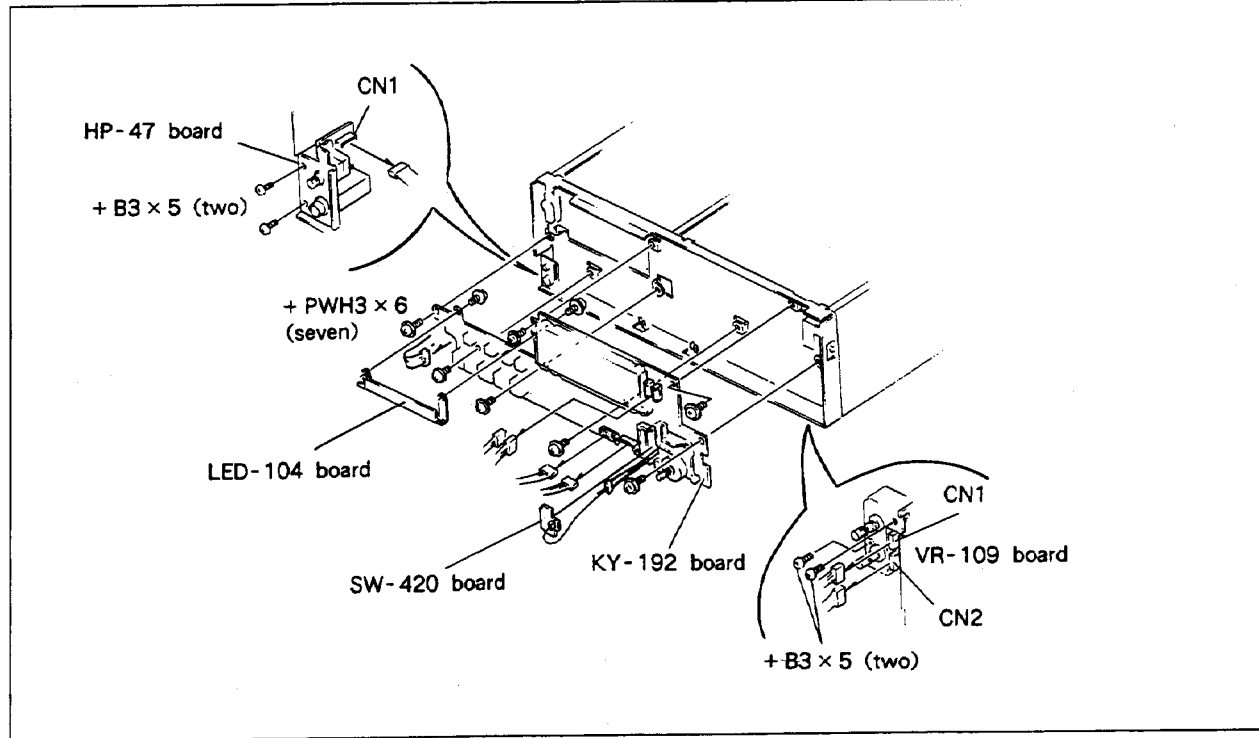
Top panel removal



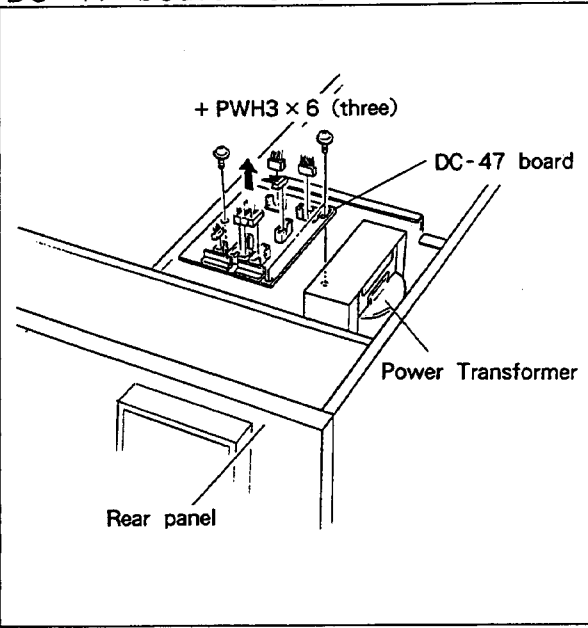
Removal of front panel assembly



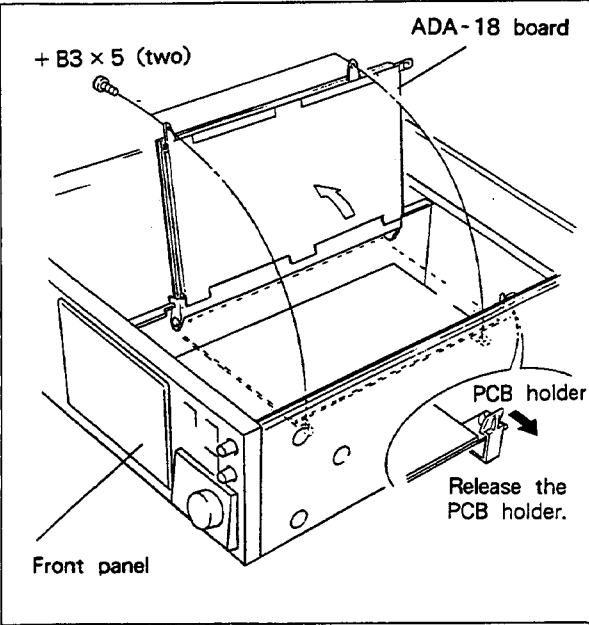
Removal of KY-192, HP-47, VR-109, LED-104, and SW-420 boards



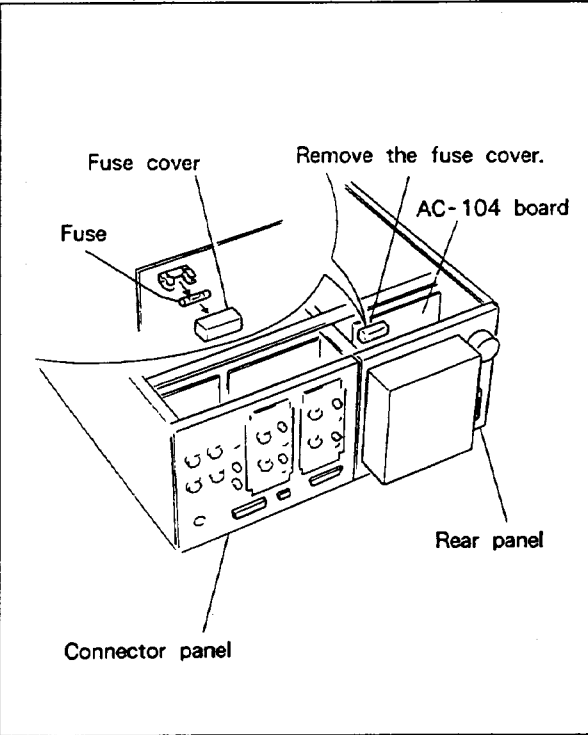
DC-47 board removal



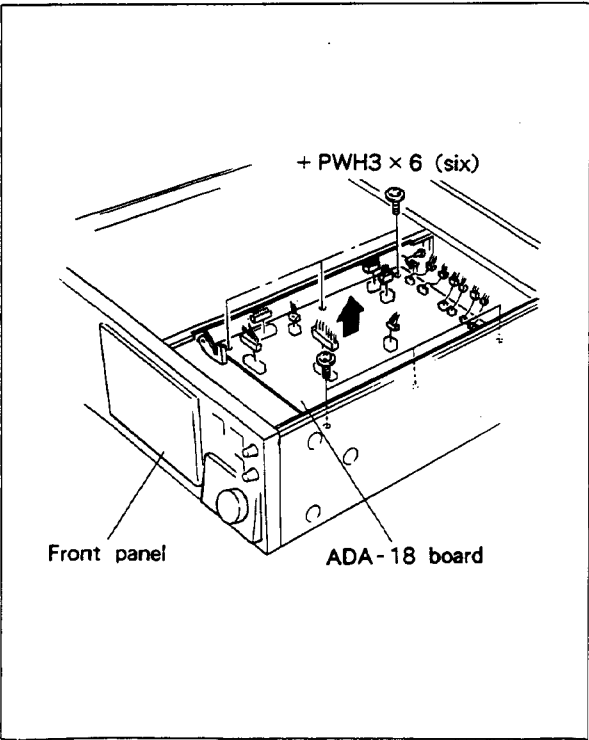
Opening the ADA-18 board



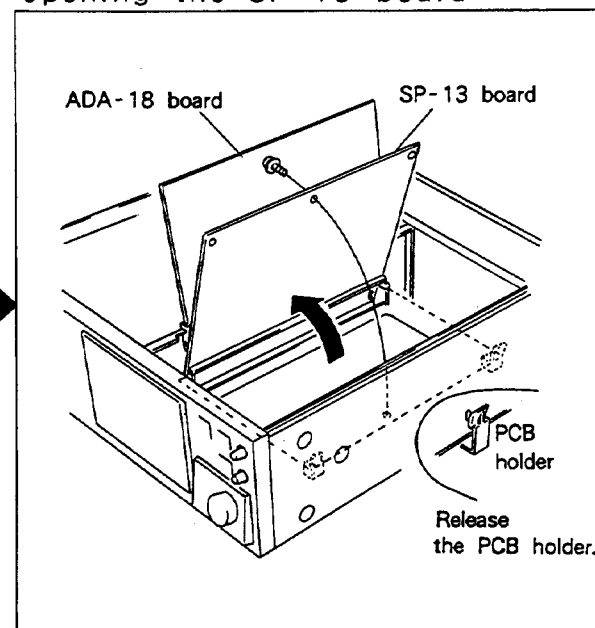
Fuse replacement



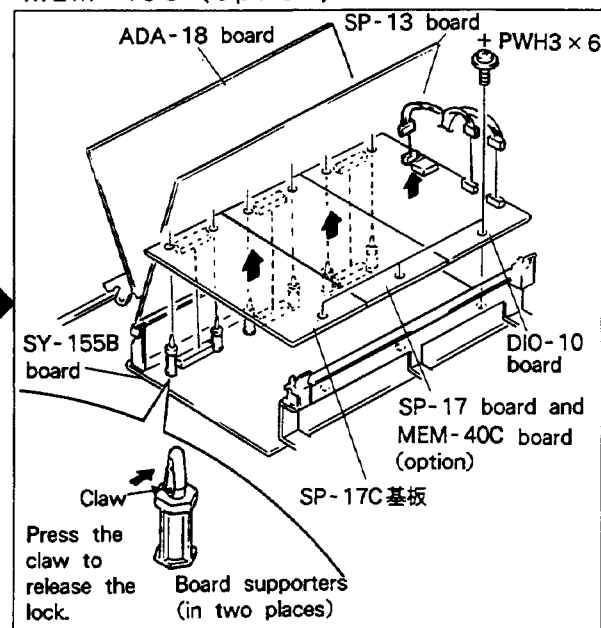
ADA-18 board removal



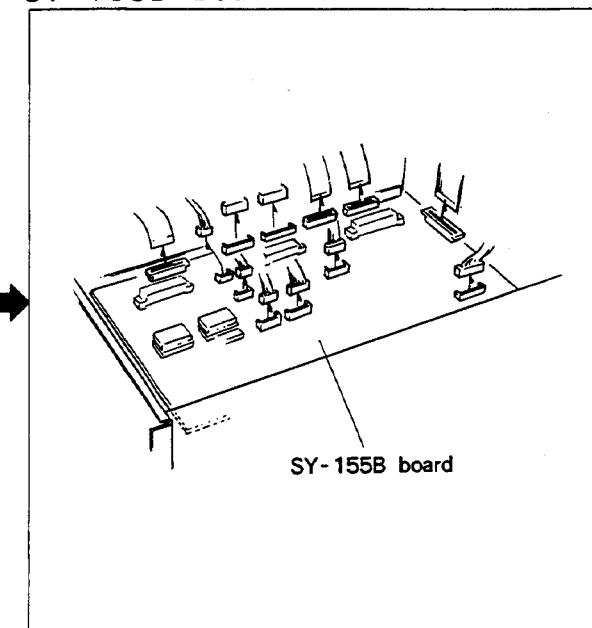
Opening the SP-13 board



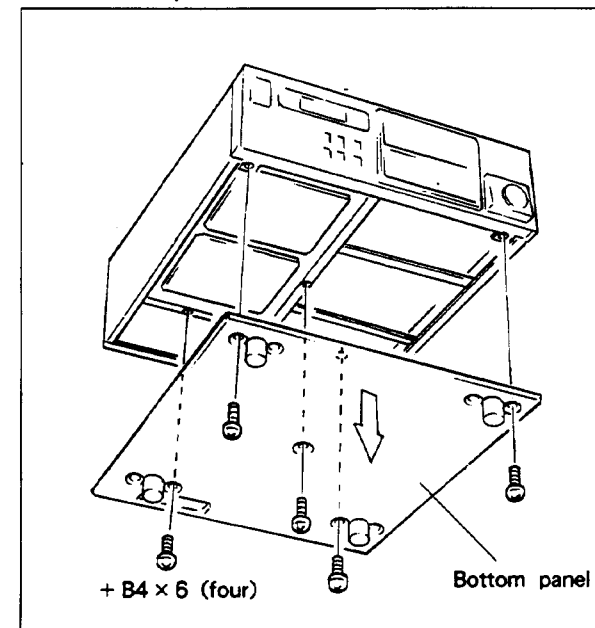
DIO-10, MEM-40A, SP-17C and MEM-40C (option) board removal



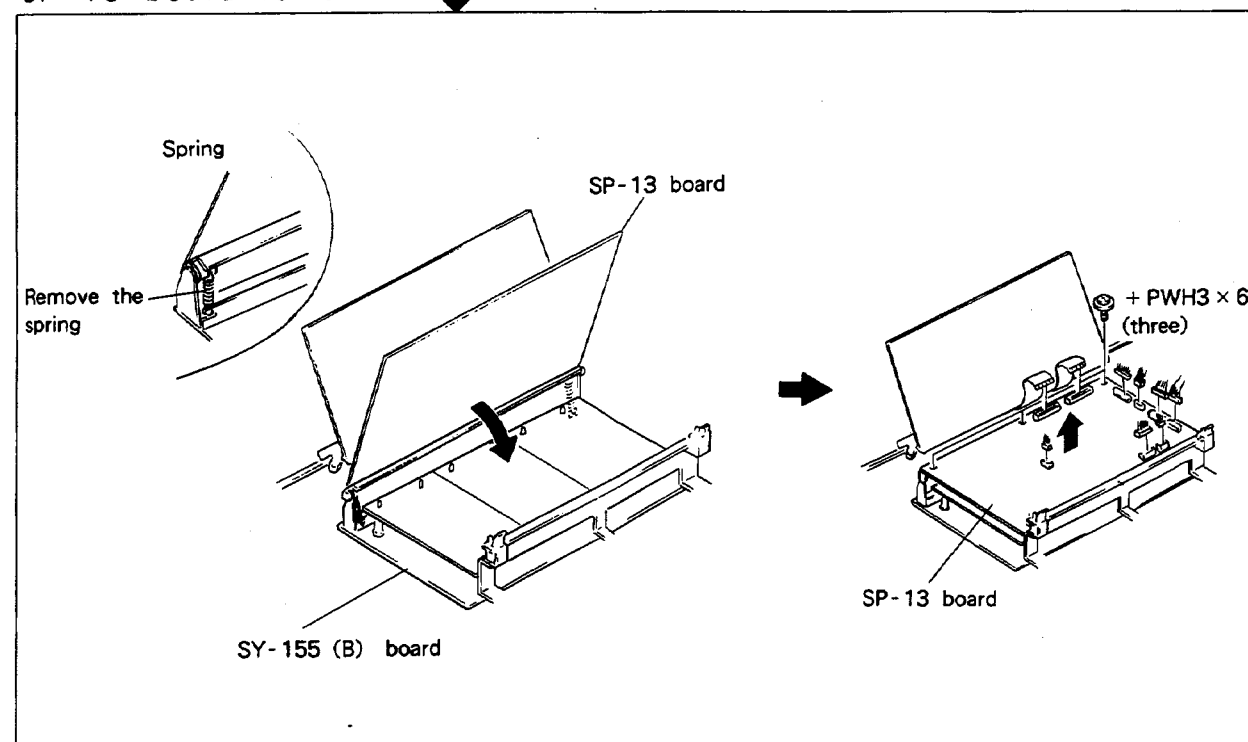
SY-155B board removal



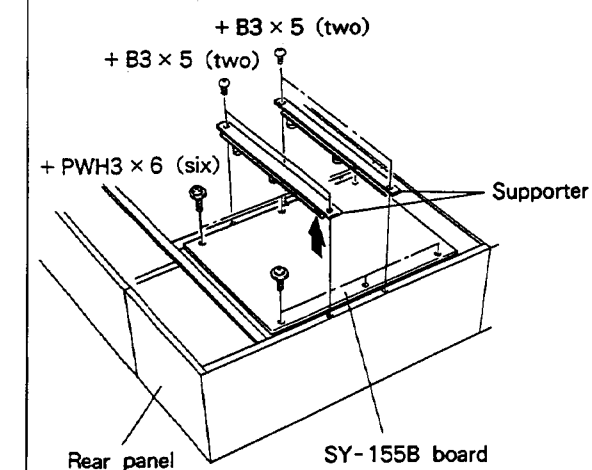
Bottom panel removal



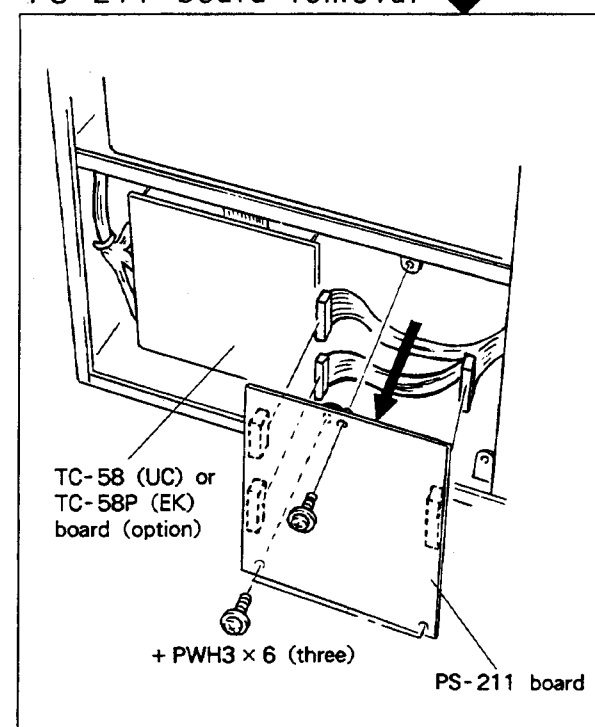
SP-13 board removal



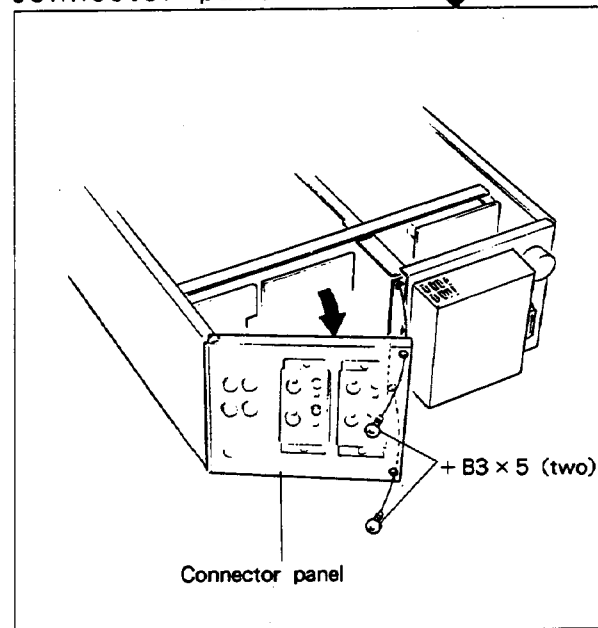
Remove the SY-155B board from the bottom plate side.



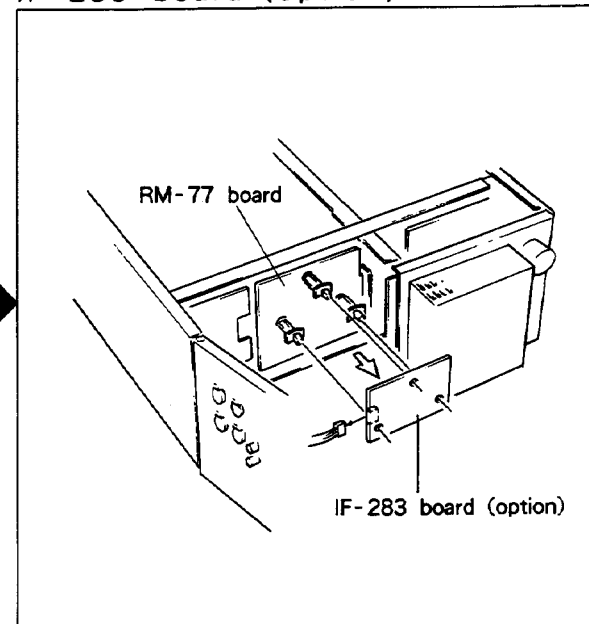
PS-211 board removal



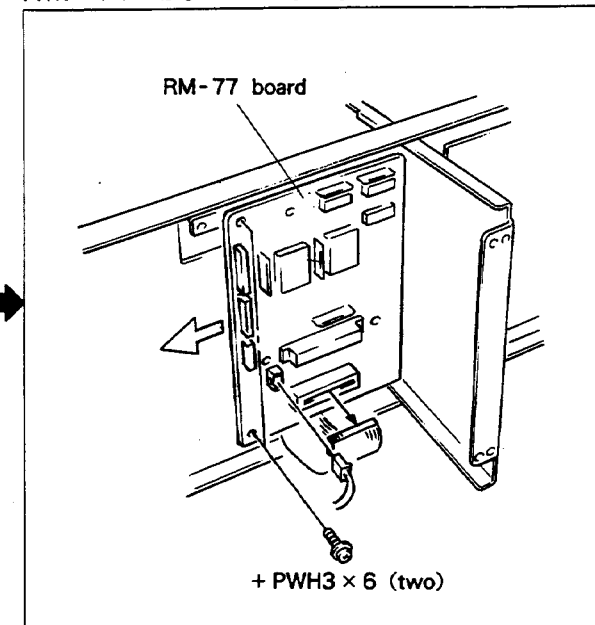
Opening the
connector panel



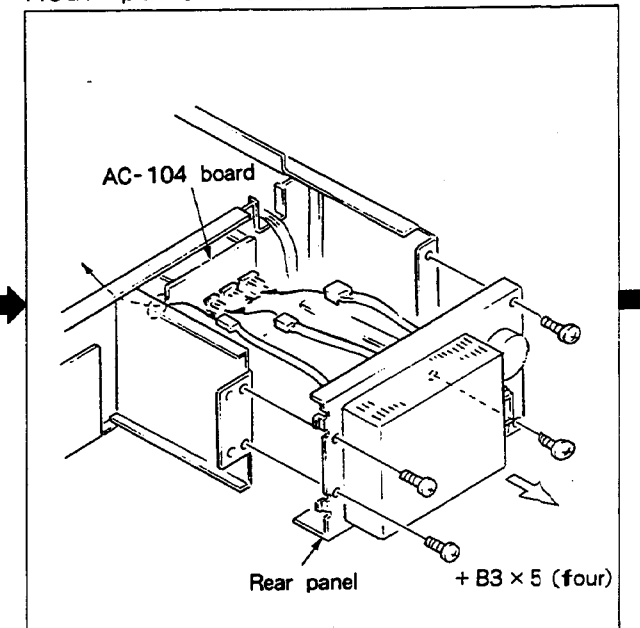
IF-283 board (option) removal



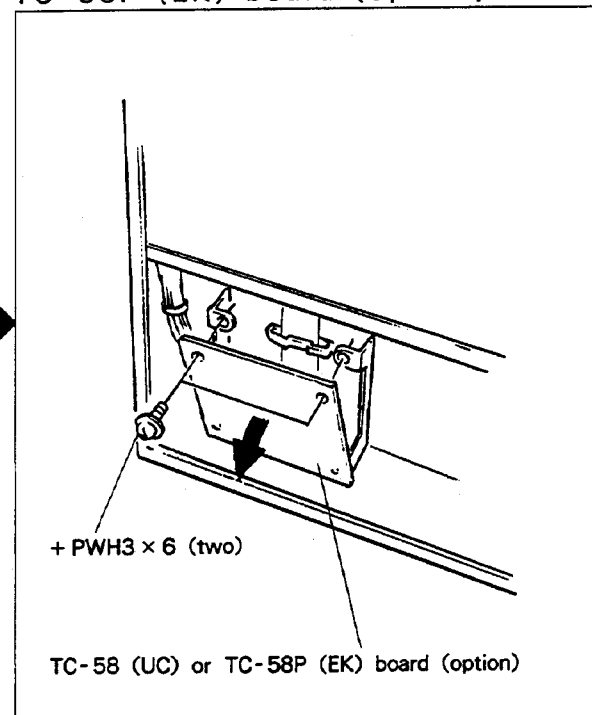
RM-77 board removal



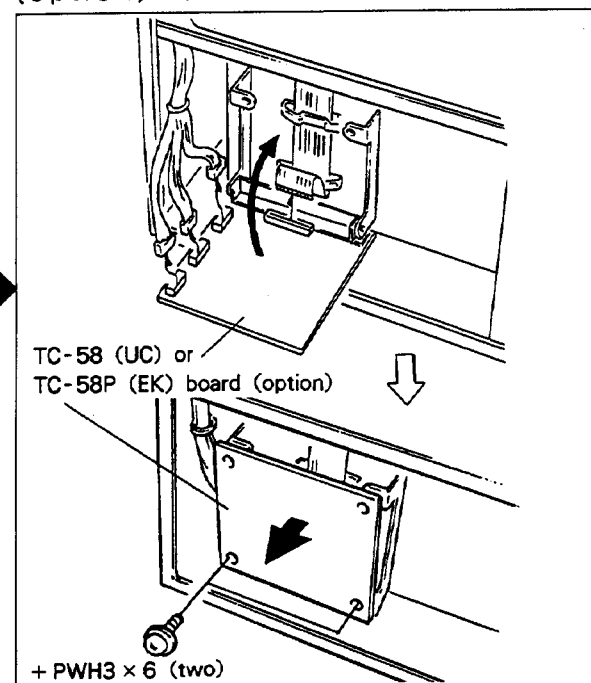
Rear panel removal



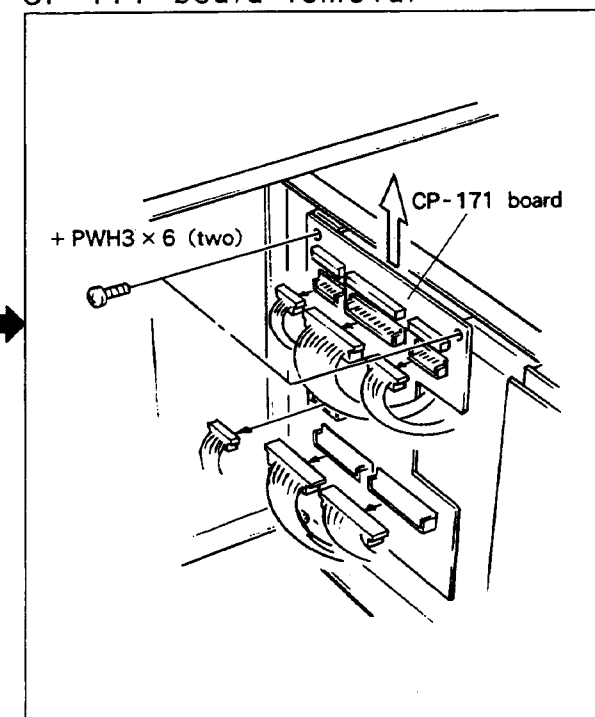
Opening the TC-58 (UC) or
TC-58P (EK) board (option)



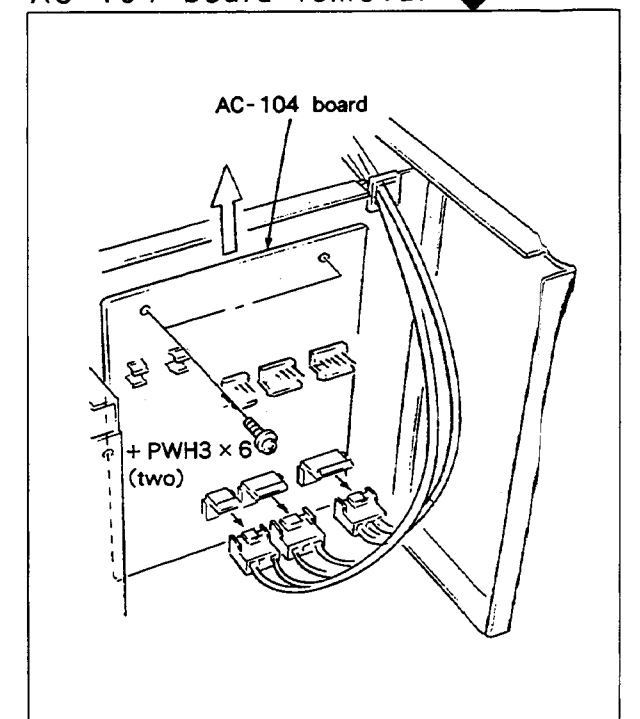
TC-58 (UC) or TC-58P (EK) board
(option) removal



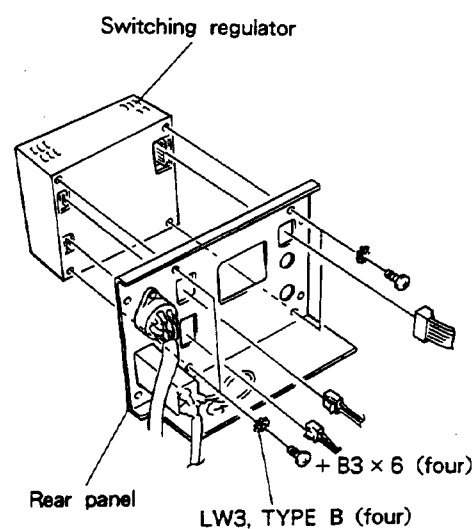
CP-171 board removal



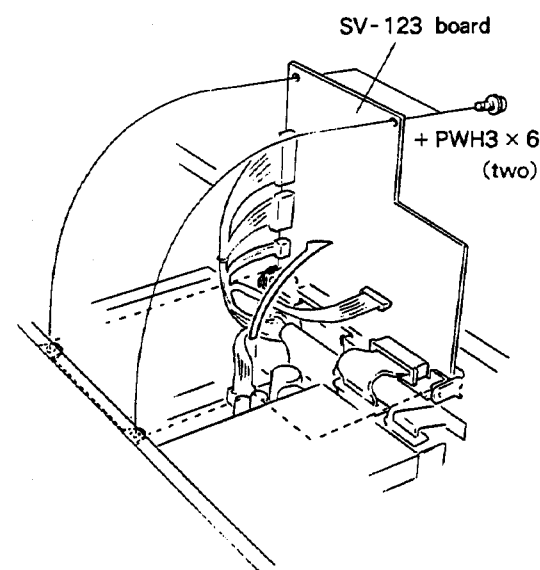
AC-104 board removal



Switching regulator removal

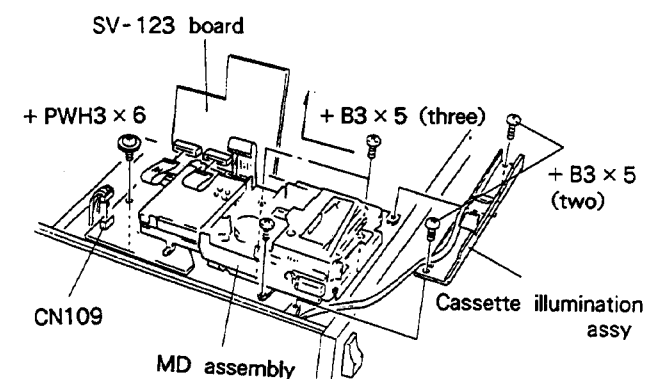


Opening the SV-123 board

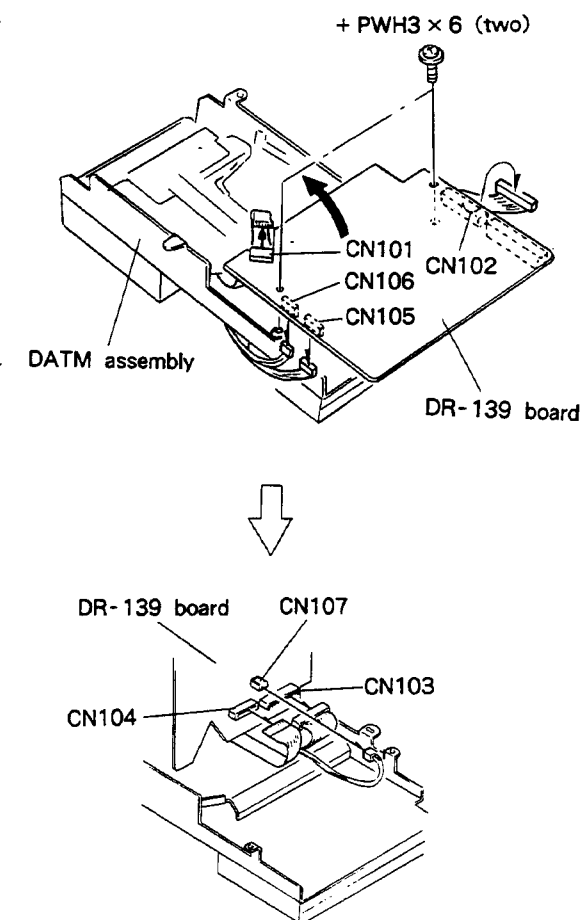


MD assembly removal

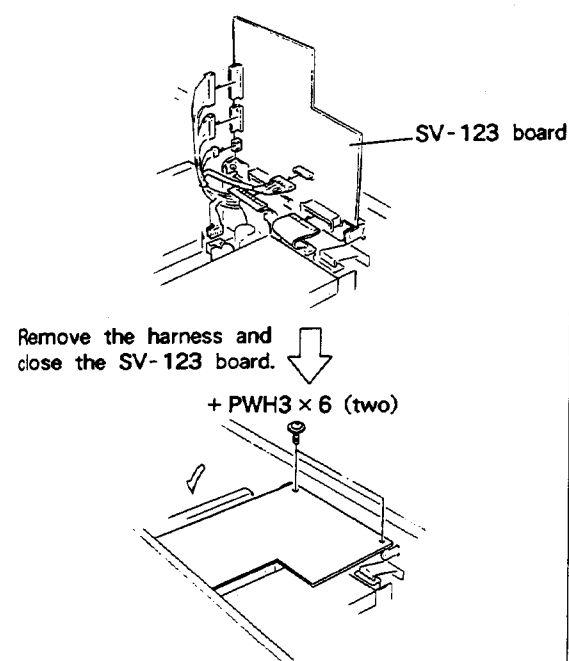
Move the MD assembly toward the rear panel and lift it up to remove.



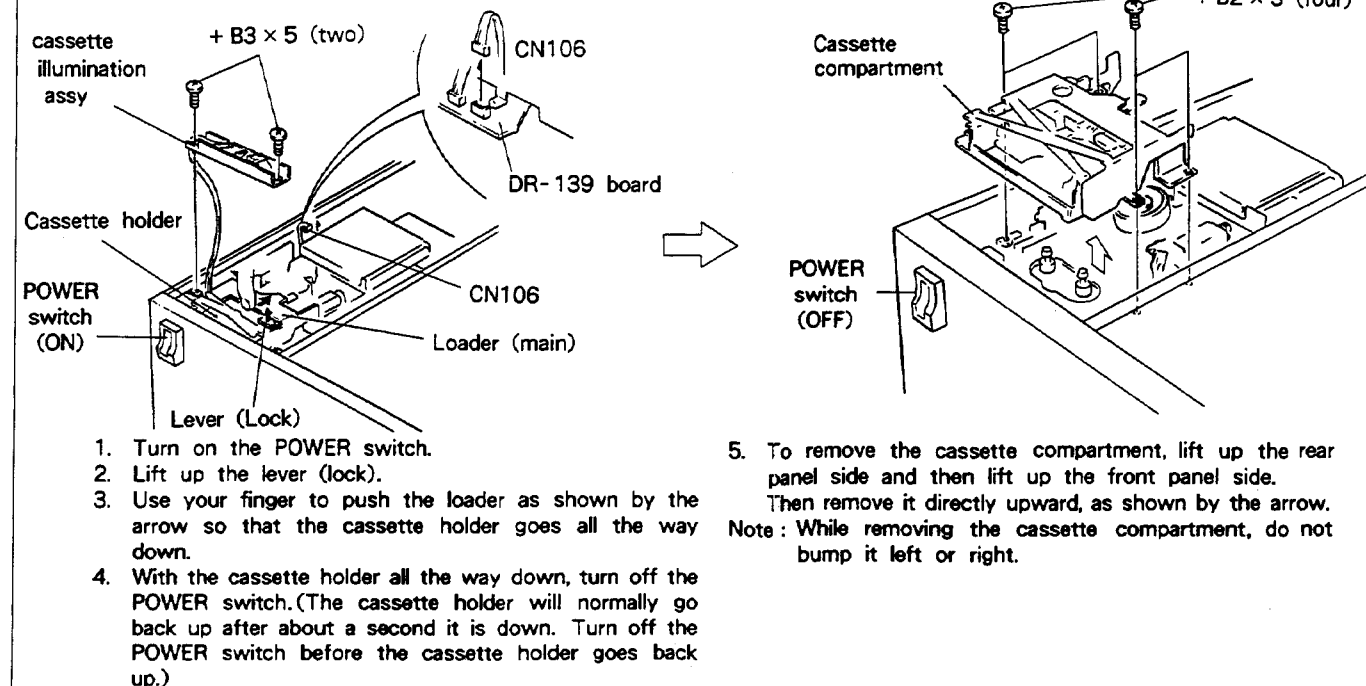
DR-139 board removal



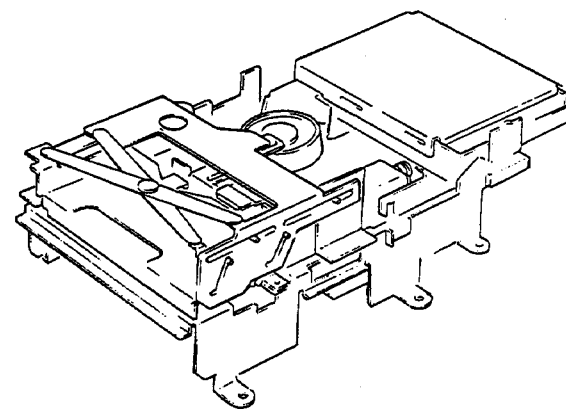
SV-123 board removal



Cassette compartment removal

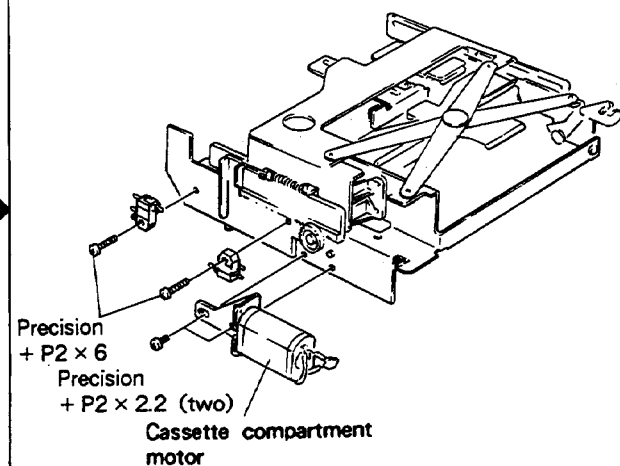


DATM assembly and Cassette compartment

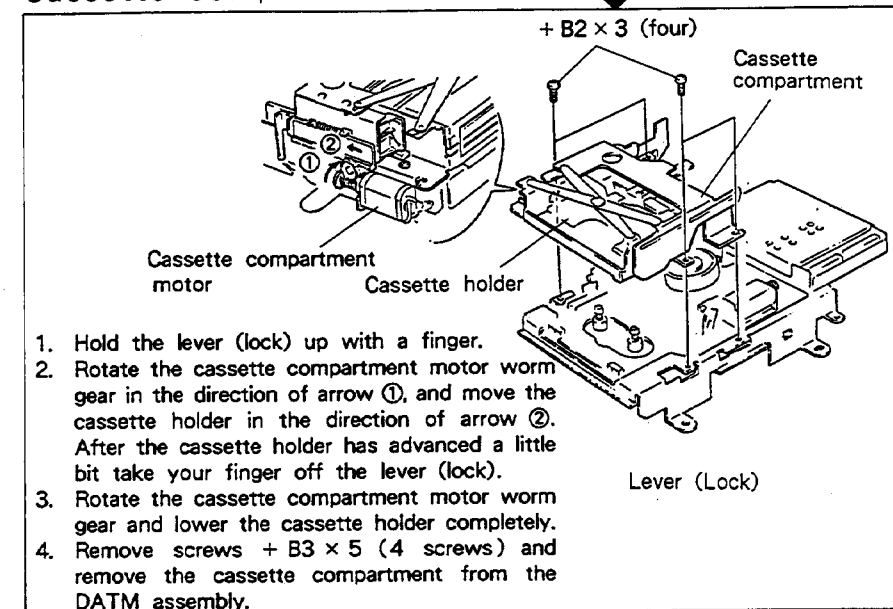


Note: Refer to the instructions "2-4-1. Installation position of the front panel and cassette compartment" for installing the DATM assembly and the cassette compartment.

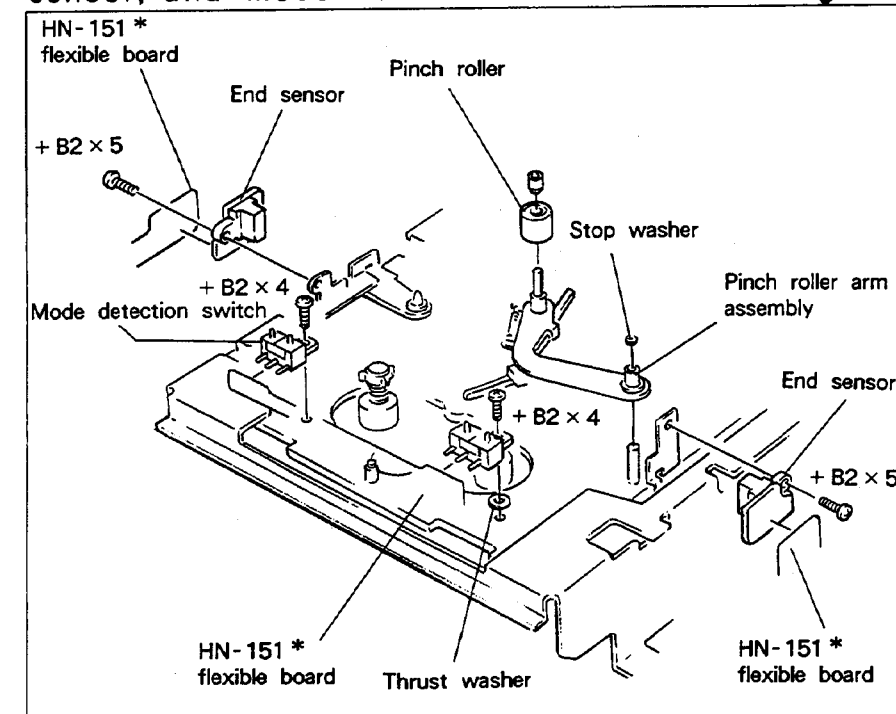
Removal of the cassette compartment motor and cassette holder detection switches (S1 and S2)



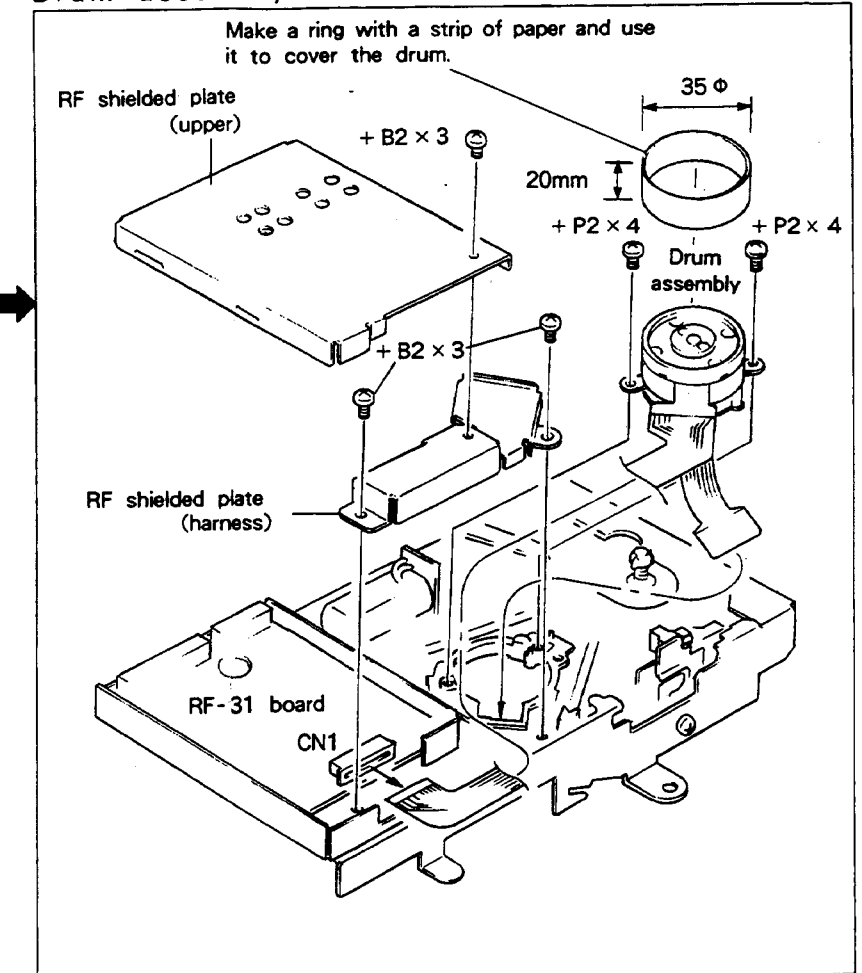
Cassette compartment removal



Removal of the pinch roller, tape-end sensor, and mode detection switch.



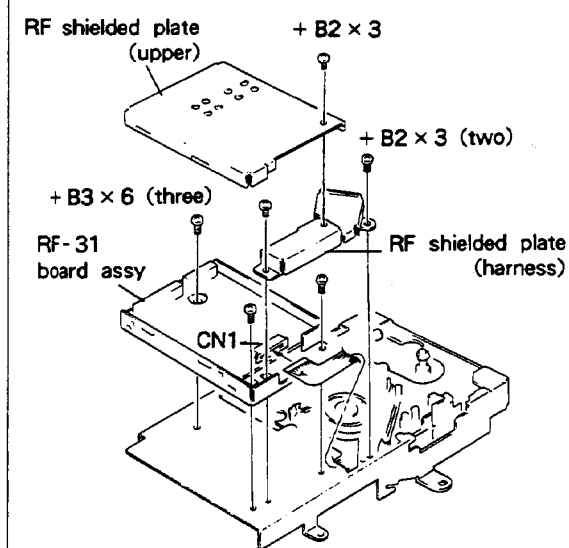
Drum assembly removal



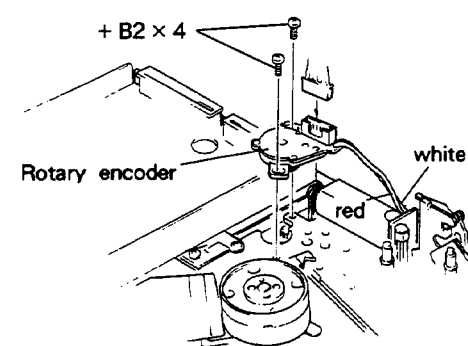
* Handling the flexible printed board

- Keep the soldering iron temperature at around 270°C.
- Do not touch the same pattern more than 3 times with the soldering iron.
- Do not exert any excessive force on the pattern.

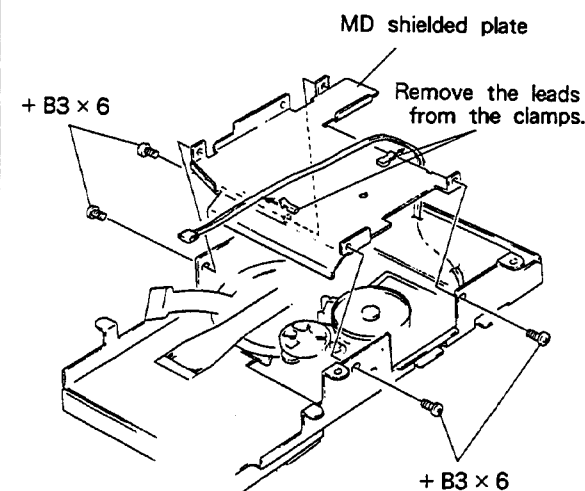
RF-31 board assembly removal



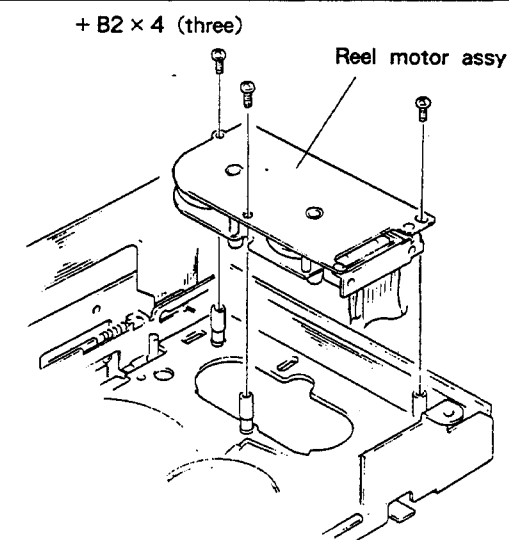
Rotary encoder removal



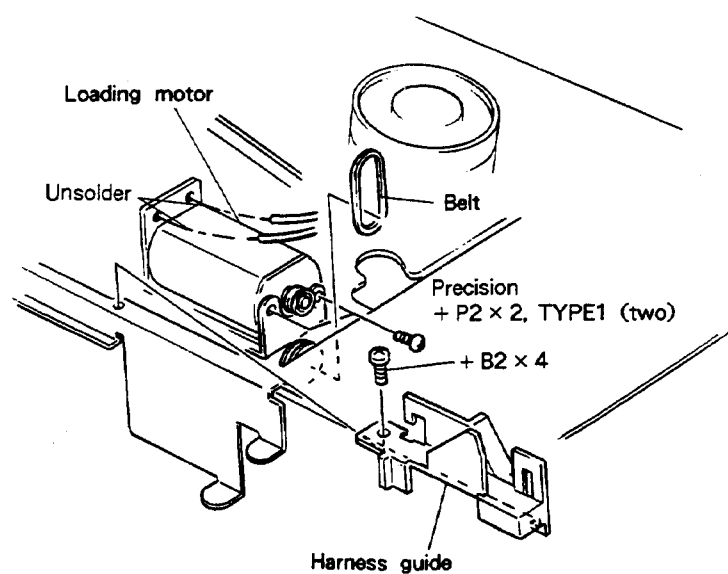
MD shielded plate removal



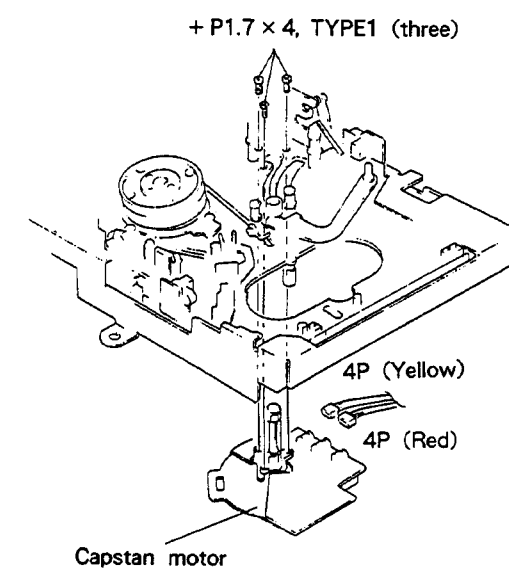
Reel motor assembly removal



Loading motor removal



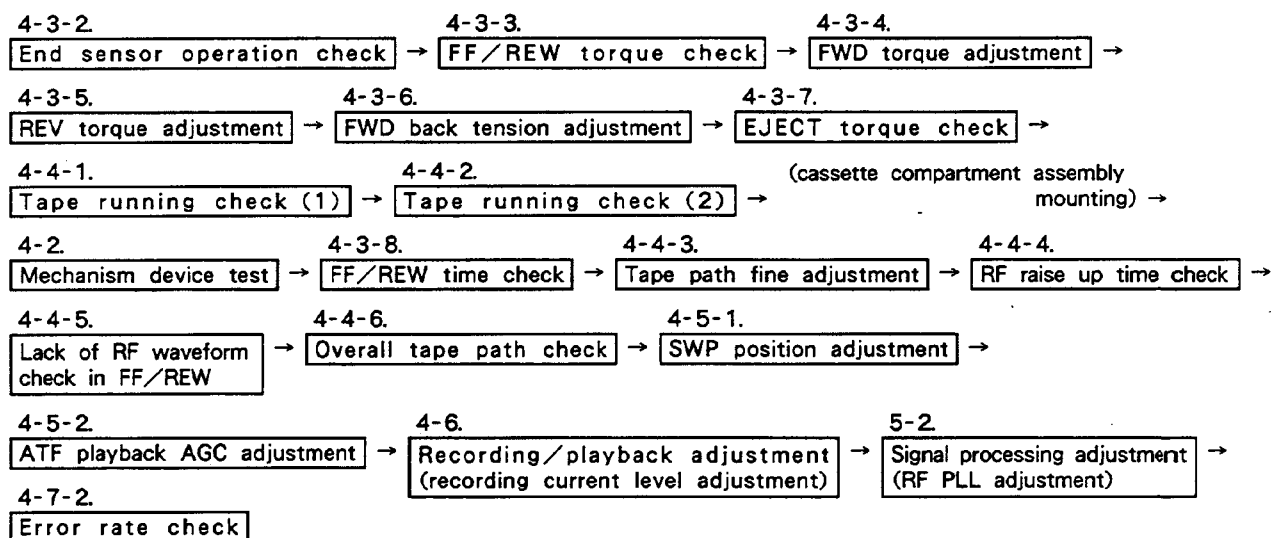
Capstan motor removal



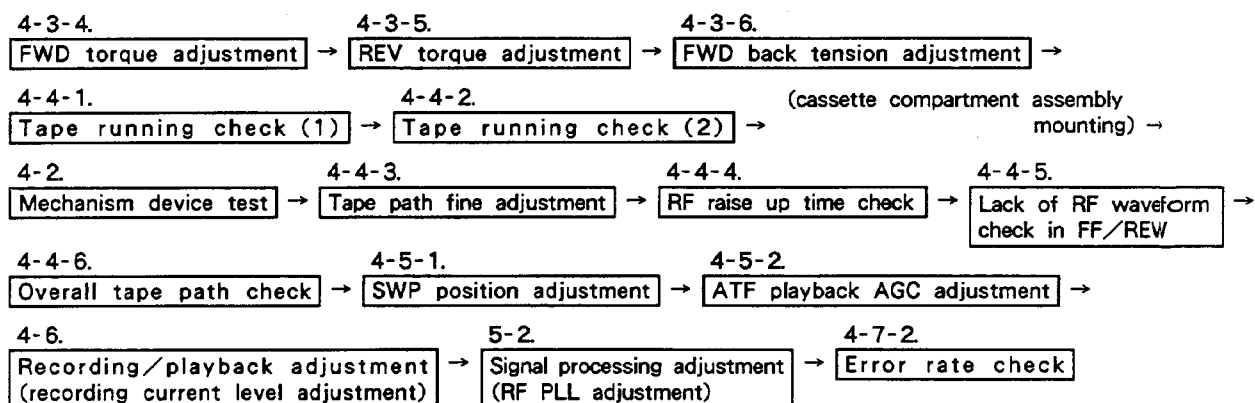
ADJUSTMENTS (CONFIRMATIONS) AFTER MAJOR PARTS REPLACEMENTS

When you replace major parts, be sure to adjust and confirm the following items.

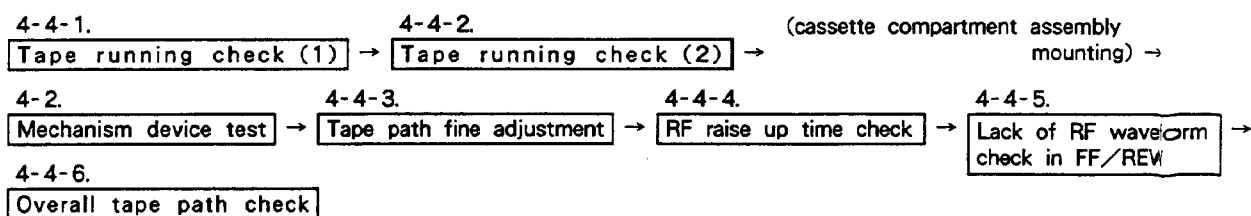
Mechanism Deck Assembly (DATM-06R)



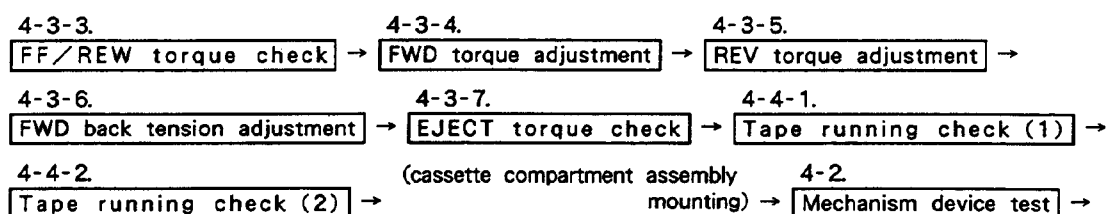
Drum Assembly (DDH-14AR)

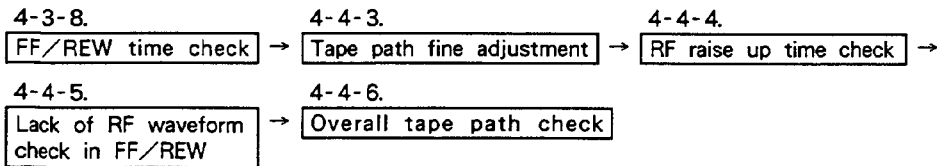


Capstan Motor (BHF2803A)

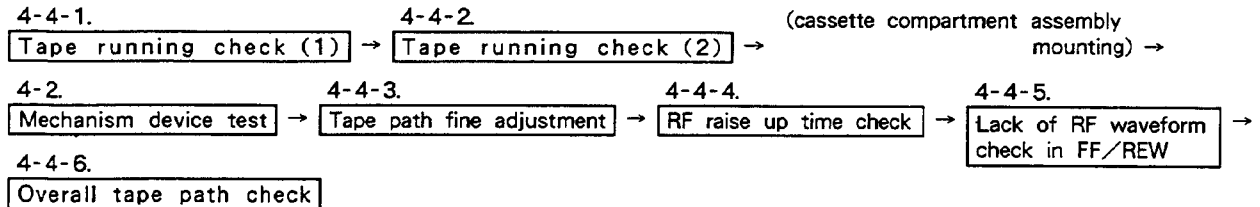


Reel Motor (U-2A)

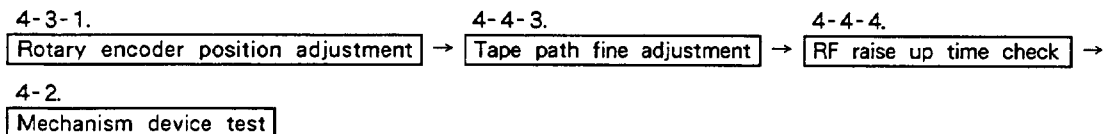




Pinch Roller Block Assembly



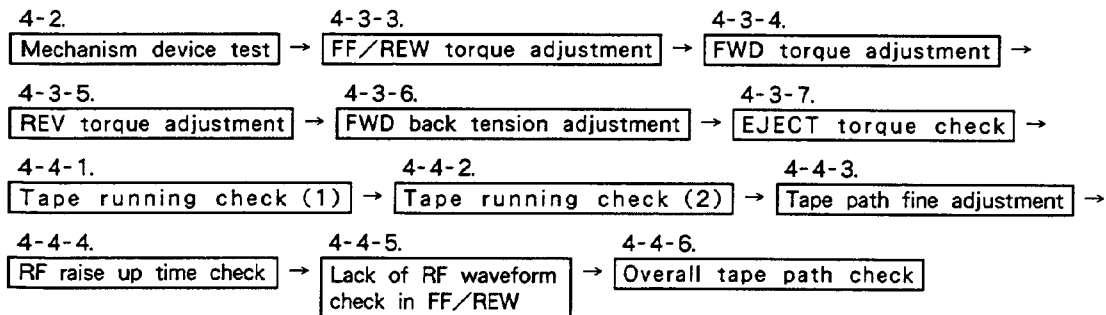
Rotary Encoder



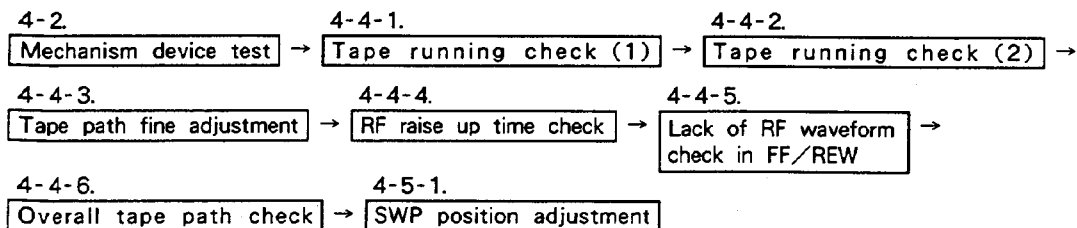
Cassette Compartment Assembly



DR-139 Board



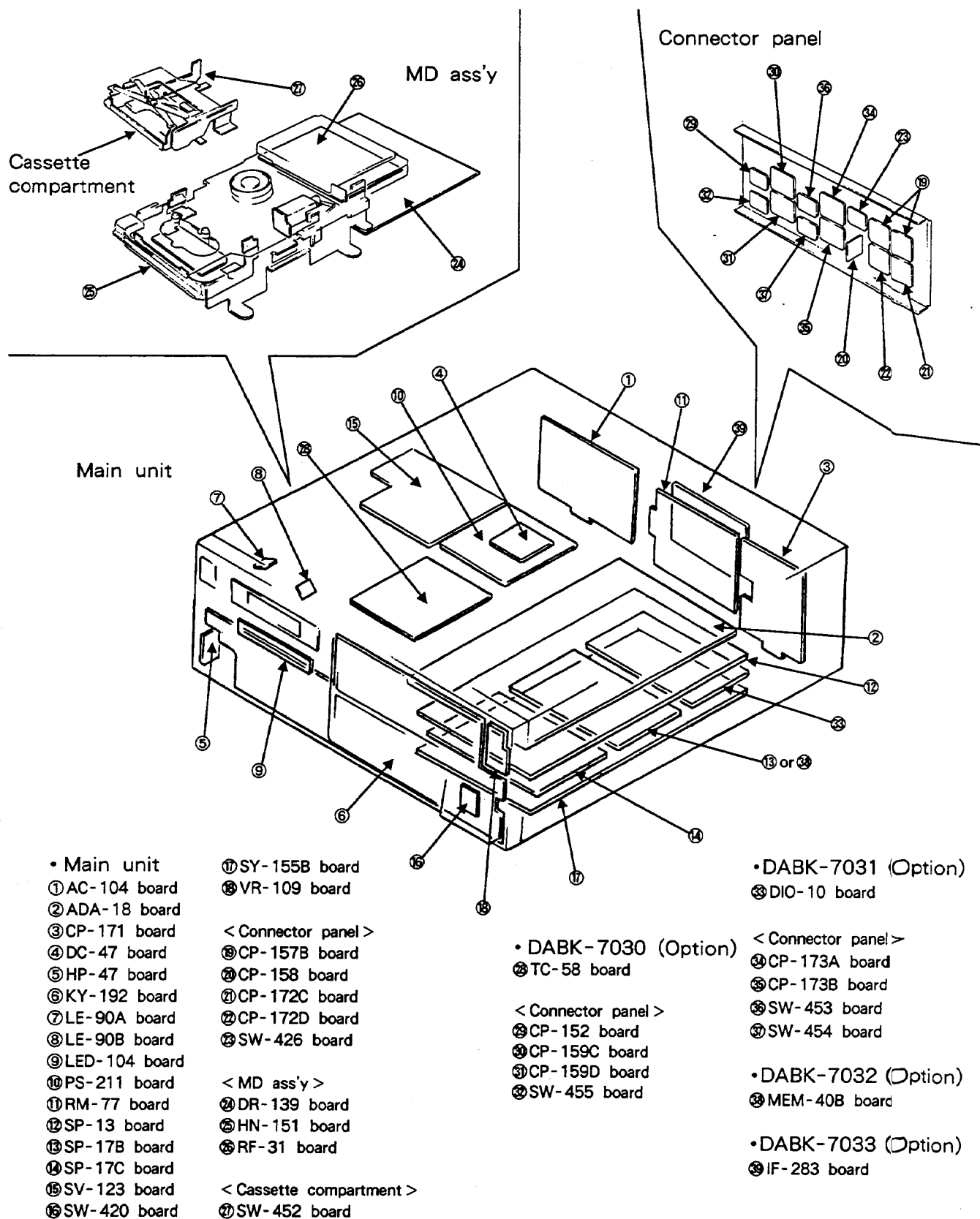
SV-123 Board



RF-31 Board Assembly

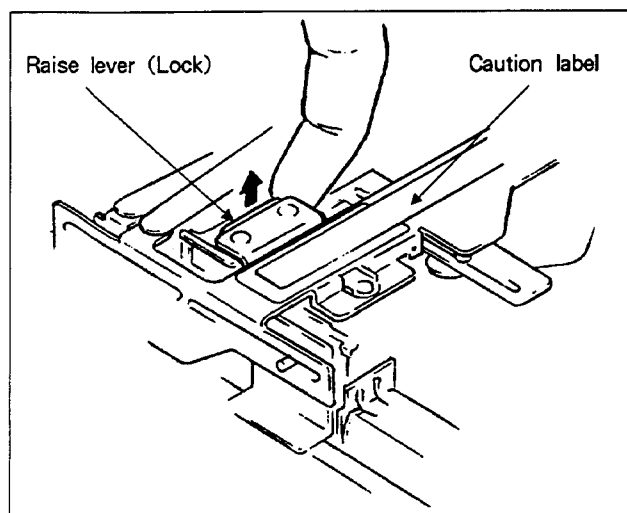


2-2. Board Arrangement View For PCM-7030



2-3. Cassette Compartment Service Information

- 1) Releasing the cassette compartment lever
Be sure to release the lever (lock) before turning (by hand) the cassette control motor's worm gear to move the cassette holder when the cassette compartment is to be replaced, etc.
Raise the lever (lock) as shown below to release the lock.



- 2) Extracting a cassette tape when EJECT and cassette UP are inoperational.

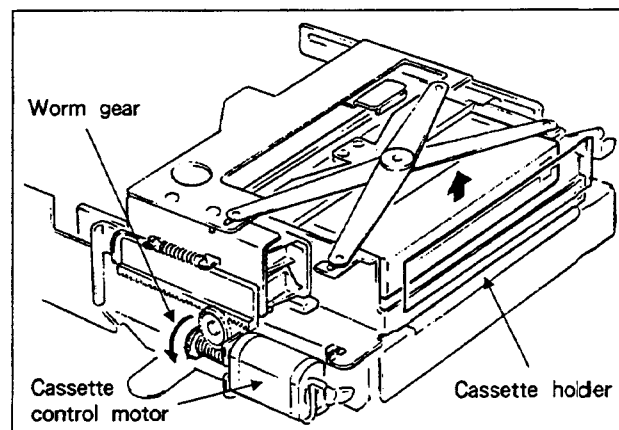
If the EJECT operation does not work or if the cassette compartment does not go up, extract the cassette tape by following the procedure below.

Procedure

- (1) Turn off the POWER switch.
- (2) Remove the top panel. (Refer to 2-1.)
- (3) Check whether the tape is out of the cassette or contained in the cassette.

If the tape is contained in the cassette, do the following :

- (4) Turn the cassette control motor's worm gear as shown by the arrow to raise the cassette holder.

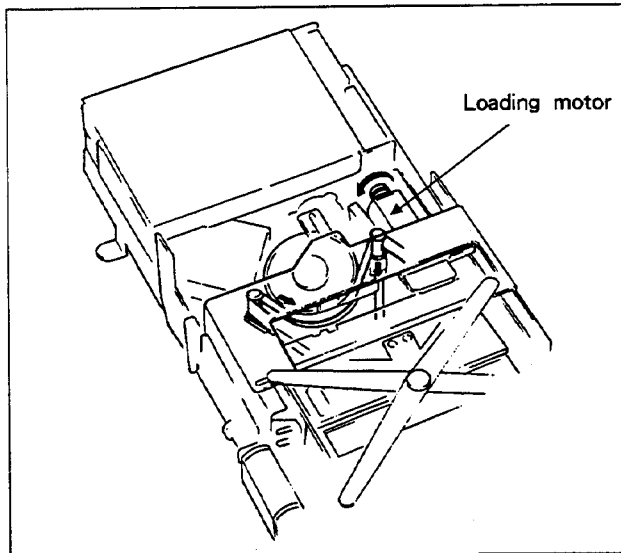


- (5) Eject the cassette when the cassette door on the front panel opens upward in link with the raising of the cassette holder (cassette tape).
- (6) Turn the worm gear until the cassette is positioned to be taken out.
- (7) Check for any problems after taking out the cassette. Execute proper countermeasures if necessary.

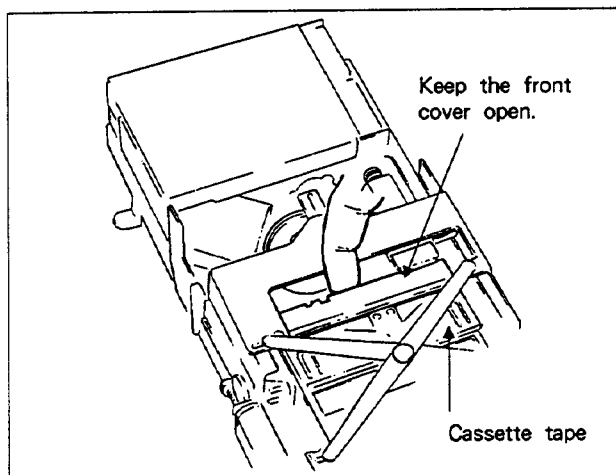
If the tape is out of the cassette, do the following:

- (4) Turn (by hand) the loading motor pulley on the mechanical deck, as shown by the arrow (ccw).

Unload the eject guide to return it. The tape will then be in the loading position.



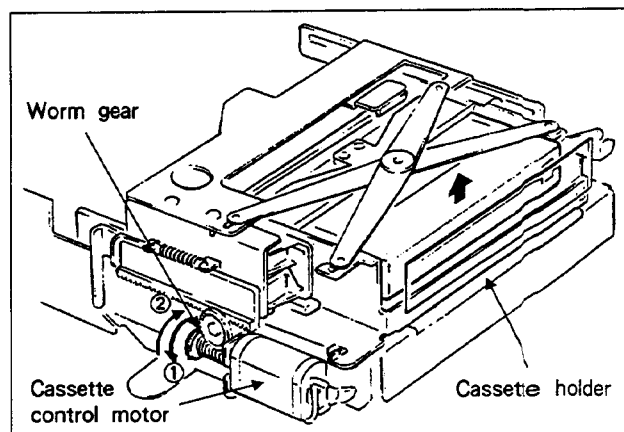
- (5) Remove the cassette compartment. (Refer to 2-1.) Slowly take out the cassette compartment while keeping the front cover open with your fingers.



- (6) Carefully take out the tape remaining in the unit (mechanical deck) without scratching it.
- (7) While keeping the cassette's front cover open, turn the reel hub in the cassette to wind the tape around the reel.

- (8) Turn the cassette control motor's worm gear to raise the cassette holder, as shown by the arrow ①. Then take out the cassette. Check for any problems after taking out the cassette. Execute proper countermeasures if necessary. After executing countermeasures, install the cassette compartment on the mechanical deck. To install, turn the worm gear in reverse to lower the cassette holder, as shown by the arrow ②. Turn the worm gear until the cassette holder goes all the way down. Then attach the cassette compartment to the MD with the four screws (+ B2 × 3).

Turn on the POWER switch to return the cassette compartment to its proper position.



3) Operation Without the Cassette Compartment (Using the cassette weight and cassette compartment dummy connector)

To operate the unit while the cassette compartment is removed, use the cassette compartment dummy connector* to stop the function of the cassette compartment motor control. Also use the cassette weight (J-6224-140-A) to insert a cassette (test tape, etc.) and to operate the unit.

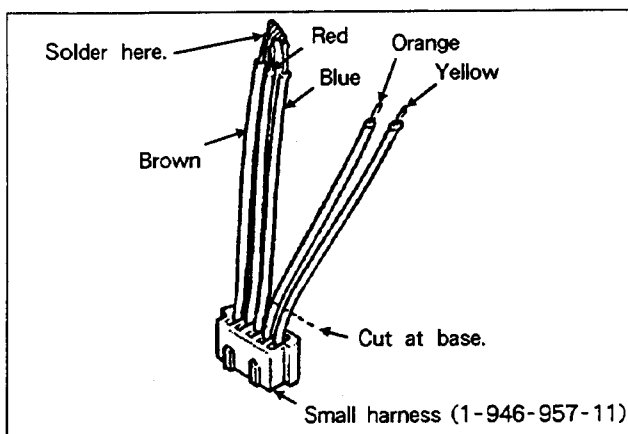
* About the cassette compartment dummy connector
The cassette compartment dummy connector is used to short pins 1, 2, and 3 of the CN106 connector on the DR-139 board.

You can make it simply in the following way using a small harness (CCP).

Required item :

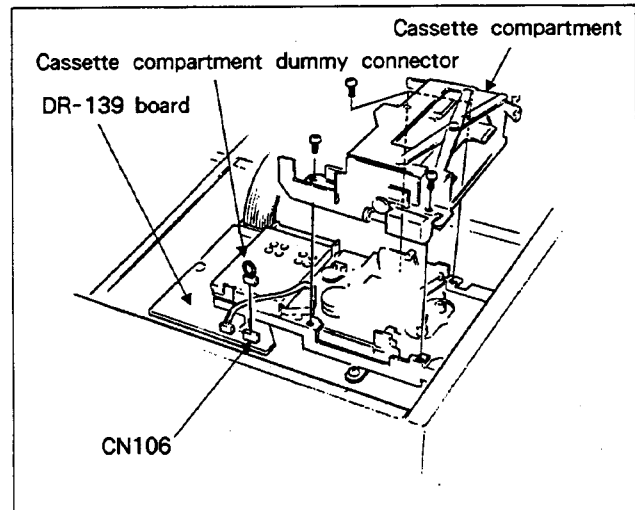
Small harness (CCP), part number 1-946-957-11

- (1) Cut the orange and yellow lead wires of the harness (CCP) at the base as shown in the figure.
- (2) Short (solder) the three remaining lead wires (red, brown, and blue) as shown in the figure.

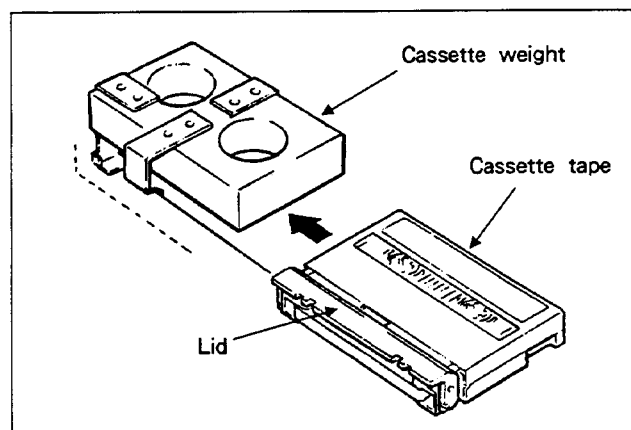


Using the Cassette compartment dummy connector and cassette weight

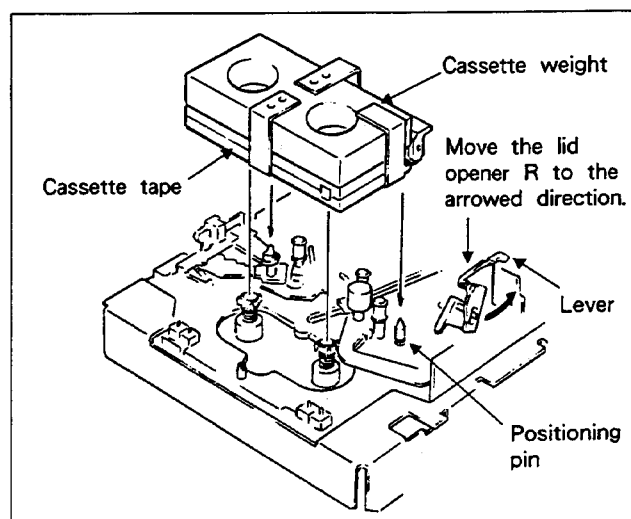
- (1) Remove the top panel.
- (2) Remove the cassette compartment.
(Refer to the removal procedure in 2-1.)
- (3) Insert the cassette compartment dummy connector into the CN106 connector on the mechanical deck's DR-139 board.



- (4) Attach the cassette tape (test tape, etc.) to the cassette weight.



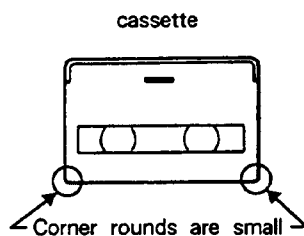
- (5) Align the cassette weight attached the cassette tape over the cassette positioning pin and mount it on the mechanical deck.



2-4. Precautions for the main parts replacement procedure

2-4-1. Installation position of the front panel and cassette compartment

Some DAT cassettes have a different external shape with a small corner round as shown below.



Using this type of cassette causes the round part of the corner of cassette tape being caught in the front panel window if the gaps between the cassette and the insertion window of the front panel are insufficient as shown below, and the error message "ERROR 2-21" may be displayed on the display of the front panel.

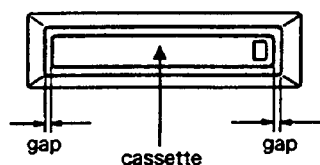
- ① DATM assembly (DATM-06R)
- ② Cassette compartment assembly
- ③ Front panel assembly

Ensure to have spaces between the cassette and front panel window when reinstalling the above parts after exchanging them for repairment.

Adjust the installing position within the range of the holes in order to install the front panel assembly and DATM assembly. Install the whole DATM by clockwise to make gaps easier.

After installation, carry out an eject operation several times by using an optional cassette tape and confirm that the both sides of the cassette tape do not touch the front panel window.

the front panel cassette window



2-5. Chip Part Replacement Procedure

Tools : Soldering iron of 20W (Use a temperature controller, if possible, which can set control the iron temperature to $270 \pm 10^\circ\text{C}$)

Solder (0.6 mm dia.)

Desoldering metal braid (Solder wick or equivalent)

Tweezers

Soldering Conditions : Tip temperature ; $270 \pm 10^\circ\text{C}$
Within the 2 seconds.

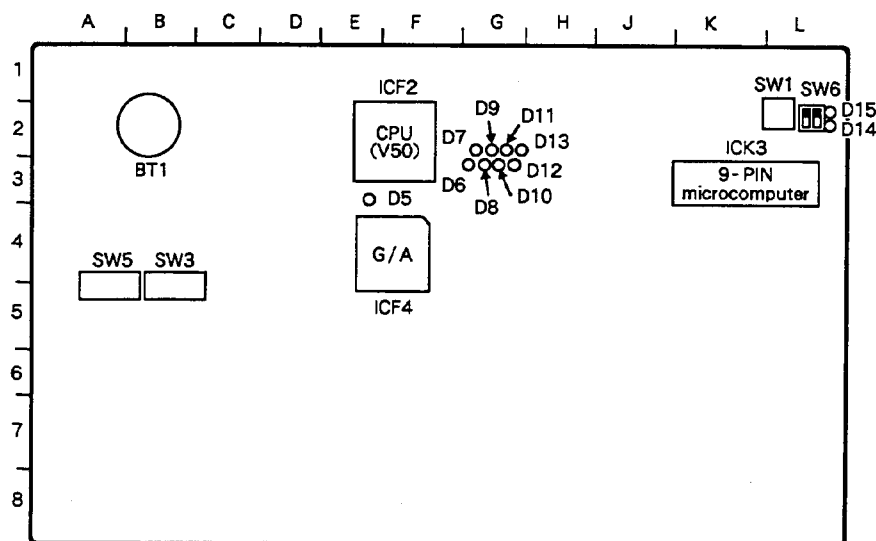
1. To remove a resistor or capacitor, place the tip of a soldering iron on chip parts to heat the parts, and then move it horizontally for removal while being desoldered.
For removal of a diode or transistor, heat the one side, with two pins, of chip parts at the same time, set the parts up when desoldered, and remove the two pins.
And then, remove the pin on another side.
2. Absorb solder by using a desoldering metal braid to smooth the land surface of board after removal.
3. Confirm by visual check that no pattern of the removed chip parts is peeled off and no adjacent parts is damaged or bridged.
4. Perform a thin pretinning on the pattern.
5. Place new chip parts on the pattern to solder its both sides.

Note :

- The chip part removed should not be used again.
- When mounting the new chip part, should not shift so that it not short.
- Use the soldering iron vertically as much as possible.
- When mounting the new chip part, heat it from pattern side. Never contact the tip of the soldering iron to the part.

2-6. SERVICE INFORMATION CONCERNING THE SY-155B BOARD (SYSTEM CONTROL)

2-6-1. LED for confirming the operations of the SY-155B board



SY-155B Board
(component side)

There are 11 LED, D5-D15, to confirm the operations of the SY-155B board.

The following explains the workings of each LED.

D5 (RED) : HARD INITIALIZE completion TALLY (SYS-INIT)

- Lights when the power source voltage monitoring circuit (ICK2) is reset.
- Extionguished when initialization (SYS-INIT ROUTINE) is completed.

D6 (RED) : BACKUP MEMORY INITIALIZE TALLY

- Lights when the backup memory is initialized at the DEFAULT value.

D7 (GREEN) : SYS nomal TALLY

- Blinks when the system component (SYSCON) operates normally. (200ms interval)

D8 (YELLOW) : SP-13 MUTE TALLY

Lights when the system activates muting on the SP-13 board

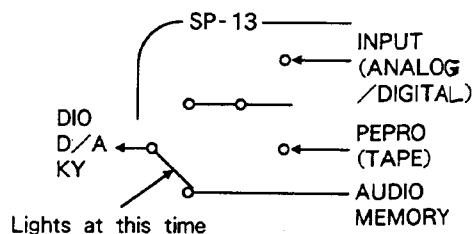
MUTE

- PB AUDIO MUTE
- SP-13 OUTPUT MUTE

(Lights in each case.)

D9 (YELLOW) : AUDIO MEMORY DATA OUT TALLY

- AUDIO MEMORY (MEM-40 board) Lights when data is output from the SP-13 board
- Lights when the monitor is set to REPRO in the SYNC REC (RMW) mode.



D10 (YELLOW): RMW TALLY

Lights when the operating mode of the CXD1008/1009 (SP-13 board) is RMW (Read Modify Write).

- ① When the recording system mode is SYNC REC.
- ② When SOFT tape (wide track pitch) is loaded.
- ③ When the leading head is selected on the ERROR RATE HEAD menu (SERVICE MENU)
- ④ When trailing head is selected on the TEST signal recording menu (SERVICE MENU)

Conditions	08/09 MODE	Leading head mode	Trailing head mode
The above ② or ③ or ④		AUDIO SUB (PB)	AUDIO SUB REC
SYNC REC	SAFE	AUDIO SUB (PB)	AUDIO SUB REC
SYNC REC	ASSEMBLE	AUDIO SUB (PB)	AUDIO SUB REC
SYNC REC	AUDIO INSERT	AUDIO SUB (PB)	AUDIO SUB REC PB
SYNC REC	SUB INSERT	AUDIO SUB PB	AUDIO SUB (PB) REC
MONITOR REC	SAFE	AUDIO SUB REC	AUDIO SUB (PB)
MONITOR REC	ASSEMBLE	AUDIO SUB REC	AUDIO SUB (PB)
MONITOR REC	AUDIO INSERT	AUDIO SUB REC PB	AUDIO SUB (PB)
MONITOR REC	SUB INSERT	AUDIO SUB PB	AUDIO SUB (PB) REC

○ mark : Sound comes out from here

D11 (GREEN) : 9-PIN microcomputer normal TALLY

- Lights when communication between the 9-PIN microcomputer (ICK3) and the system (ICF2) has been confirmed.

D12 (RED) : 9-PIN data signal reception TALLY (9-PIN microcomputer→SYSCON)

- Lights when receiving data from a 9-PIN microcomputer.

D13 (RED) : 9-PIN data signal transmission TALLY (9-PIN microcomputer←SYSCON)

- Lights when data is transmitted to a 9-PIN microcomputer.

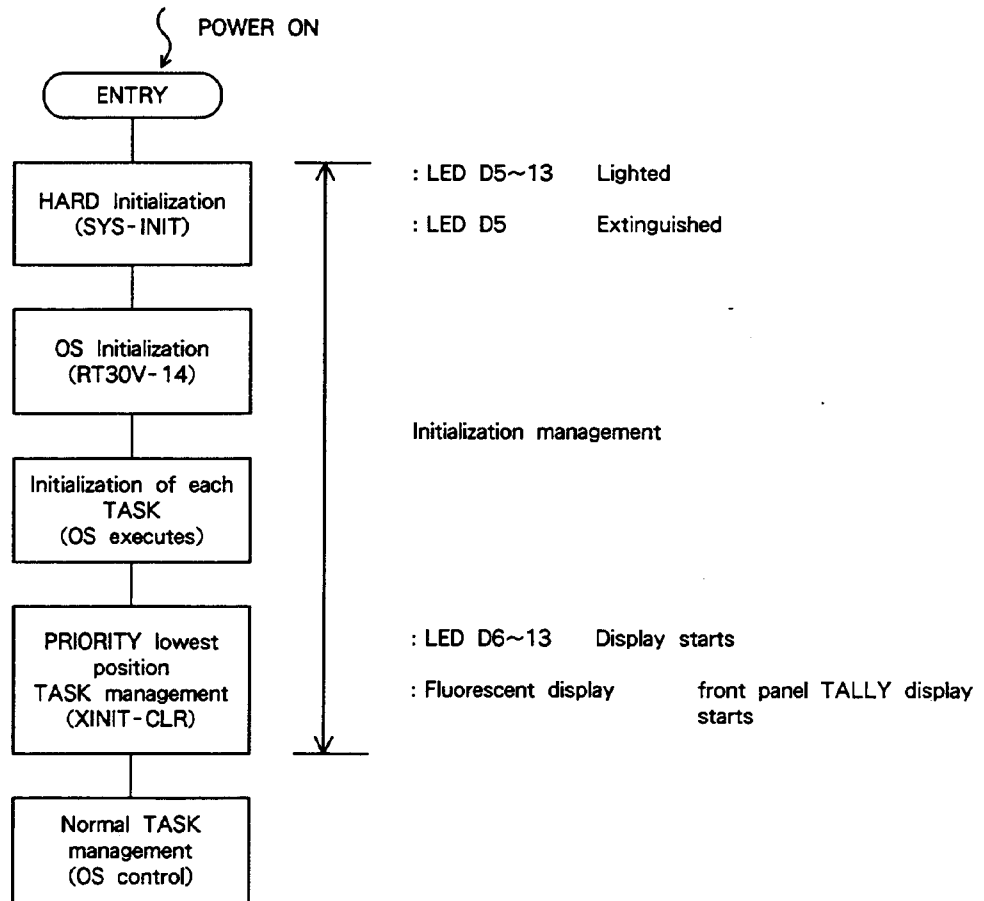
D14 (RED) : 9-PIN data signal reception TALLY (SCU→9-PIN microcomputer)

- Lights when receiving data from a SCU (μ PD71051) ICK4.

D15 (GREEN) : 9-PIN data signal transmission TALLY (SCU←9PIN microcomputer)

- Lights when data is transmitted to a SCU.

LED display management after power is on



2-6-2. Replacing the SY-155B board

The following two items are necessary when replacing the SY-155B board

- (1) Initialization of the SETUP item to back up
- (2) Writing to the SERVO system DPG and AGC DATA backup memory

Make sure that the following time information (① ~⑤) is reset by doing step (1).

① HOUR TIME (DRUM ON TIME) :

display menu, service menu

② OPERATION TIME : service menu

③ TAPE RUNNING TIME : service menu

④ TOTAL HOUR TIME : service menu

⑤ THREAD/UNTHREAD COUNTER :

service menu

Consequently, before replacing the SY-155B board make a note of this information. After replacing, it is important to figure out the sum of the information taken note of and the newly displayed time to set the correct time.

SY-155B board replacing procedure

Step 1 Make a note of the hour meter data

- (1) Turn on the power (POWER) to the unit.
- (2) Open the service menu by simultaneously pressing the STOP, DISPLAY and SET keys on the front panel.
- (3) While pressing the DATA key, turn the search dial to the right to set the work area of the display of the front panel to the following.
Display (work area) : oPEn
- (4) Press the SET key.
- (5) While pressing the MENU key, turn the search dial to the right, display the hour meter data (① ~⑤) and make a note of them.
- (6) Turn the power (POWER) OFF.

Step 2 Removing the SY-155B board

Carry out the following procedure while referring to the instructions for "2-1. Removal of boards and major mechanical parts".

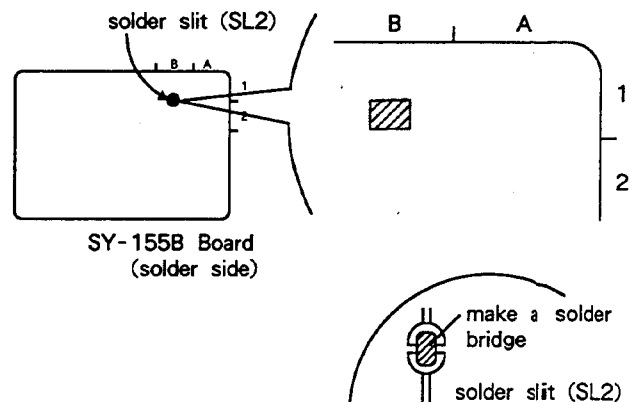
Note : Carry out removal with the power (POWER) turned off.

- (1) Remove the top and bottom panels from the unit.
- (2) Open the ADA-18 board and the SP-13 board
- (3) Remove the DIO-10 board and the optional MEM-40B board (if the DABK-7032 is installed).
- (4) Remove the harness from each connector of the SY-155B board.
- (5) Remove the SY-155B board from the bottom panel.

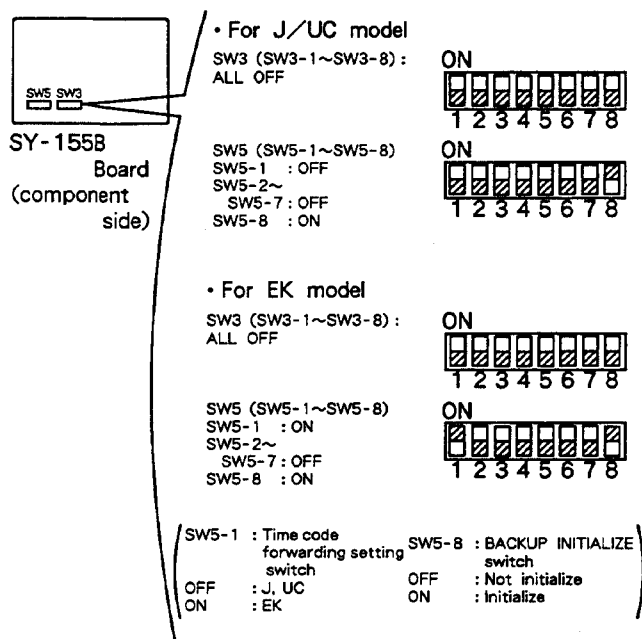
Step 3 Installation of the new SY-155B board

- (1) Carry out the following procedures before installing the SY-155B board in the unit.

- ① Solder (solder bridge) the battery backup solder slit (SL2) (see diagram below) on the solder side of the SY-155B board.



- ② Set the bit switches (SW5, SE,3) on the component side of the SY-155B board in the following way.



- (3) Install the SY-155B board in the unit.
(4) Attach the bottom panel to the unit.

Step 4 Initialization of set up data and time information data

- Turn the main unit power switch (POWER) to ON.
- Confirm that LED D6, that confirms the operation of the SY-155B board, is lighted.
(Execute the initialization of the back up memory TALLY)
- Confirm that the FL display of the front panel display is as below.
(That is ; SERVO DPG, AGC DATA CLEAR)
FL display : Error 2-05
- Turn main unit power switch to OFF.
- Set switch number 8 of the SY-155B board's bit switch (SW5) to OFF.

Note : Make sure that this switch (SW5-8) is off.
If it is left on, the back up memory will be initialized each time the power switch is turned on.

- (6) Confirm that the SY-155B board's LED D6 (red) goes out when the power switch is turned on. (At this point the Error 2-05 indicator is displayed on the FL display because the SERVO is not yet adjusted.)

Further, confirm that the time code indicator (upper left) and time code mode indicator (time area, upper right) are set in the tape time area of the FL display in the following way.

Destination	Tape time area	
	Set time code display	Time code mode display
J, UC	SMPTE	DF
EK	EBU	—

If the display is different, confirm the setting of switch 1 (time code setting switch that depends on the destination) of the SY-155B board's bit switch (SW5) and redo the step 4 procedure form (1).

(It must be redone. The TC format's default value is set by the number 1 switch during backup memory initialaization.)

Step 5 Writing the servo system's DPG and AGC data into memory

- Perform adjustment of DPG and AGC by opening up the test menu in the service menu.
Concerning adjustment. Perform it while referring to 4-21 page, 4-5-1. SWP position adjustment and 4-22 page, 4-5-2. ATG playback AGC adjustment
- Confirm that Error 2-05 is not displayed in the FL display. Further, insert a cassette that has finished being recorded (music) and replay it to confirm that the sound is reproduced.
- Turn the power switch (POWER) to OFF.
- Turn the power switch (POWER) to ON.
- Confirm that the following indicators are not displayed on the FL display.
Display indicator (work area) : Error 1-05
If the indicator is displayed confirm the battery backup's solder slit.

- (6) Turn the power switch (POWER) to OFF.
- (7) Install the optional board.
- (8) Close the SP-13 board and ADA-18 board and fasten with screws.
- (9) Put on the top panel.

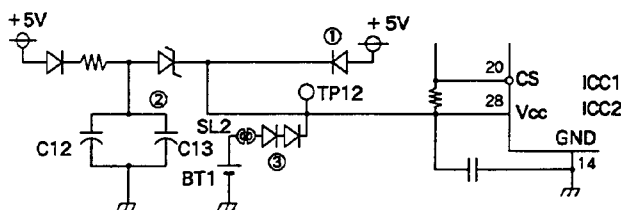
2-6-3. Replacing the lithium battery (CR-2450)

Replace the SY-155B board's lithium battery (CR-2450) for battery backup according to the following procedure.

Name of parts

Lithium battery (CR-2450) : 1 (part number : 1-528-229-11)

Explanation of operation



In the above circuits, Vcc +5V and CS pull-up resistor +5V are supplied to ICC1 and ICC2 by three power circuits as follows :

- ① Power source of the unit
 - ② +5V from C12 and C13 charged by the power source of the unit.
 - ③ +3V from BT1
- During operation of the unit the above voltages are supplied by ①, and ② recharges.
 - When the unit is off the above voltages are supplied by ②.
 - When ② is completely discharged, the above voltages are supplied by ③.

In this way the ICC1's and ICC2's SRAM data is backed up.

Replacing procedure .

- (1) Turn the power switch (POWER) of the PCM-7030 to ON and wait for more than 10 minutes.
- (2) Turn the power switch (POWER) to OFF.
- (3) Remove the SY-155B board from the unit.
- (4) Remove the solder from the solder slit (SL2) on the solder side of the SY-155B board.
- (5) Remove the lithium battery (BT1) from the SY-155B board.
- (6) Solder (solder bridge) a new lithium battery (CR-2450).
- (7) Solder (solder bridge) the solder slit (SL2).
- (8) Install the SY-155B board in the unit.
- (9) Turn the power switch (POWER) to ON.
- (10) Confirm that the ARAM (ALARM) indicator on the front panel is extinguished.

Precautions :

- Perform the change carefully because the contents of the SRAM will be destroyed if the pins of TP12, ICC1 and ICC2 are shorted.
- In procedure (8) above if ARAM (ALARM) is lighted (Error 1-05 or Error 2-05 are displayed in the FL display), their ALARM management is carried out. (Refer to the item on setting the servo data)
- Replace them after confirming that the voltage of the new batteries is 2.6V or more.

2-7. SELF-DIAGNOSIS (ERROR CODE)

2-7-1. Error codes

This section shows the error codes and the malfunctioning parts that can be assumed from the error codes displayed (refer to the OPERATION MANUAL's pages 7-6, 7-2-2. for the section on error codes) by the self-diagnosis function of the SYS CPU (SY-155B board's ICF2, μ PD70216 [V50]). With these it is possible to know what caused the error.

Error code 1-** (Error 1-***)

Errors that occur related to the SY-155 board
(system control)

Error code	Error content	Error level	Assumed malfunctioning parts
1-01	Error in ADDRESS BUS	5	• μPD70216L (CPU) (ICF2) • CXD8139AQ (ICF4) • ADDRESS (A0~A19) pattern
1-02	Error in DATA BUS	5	• μPD70216L (CPU) (ICF2) • CXD8139AQ (ICF4) • DATA (D0~D15) pattern
1-03	Error in ROM	5	• AM27C010 (ROM) (ICC3, ICC4) • ADDRESS, DATA or CONTROL pattern in ROM
1-04	Error in RAM	5	• μPD43256AGU (RAM) (ICC1, ICC2) • ADDRESS, DATA or CONTROL pattern in RAM
1-05*	BACKUP MEMORY DATA has been destroyed	5	• Battery backup circuit • RAM • TL7705CPS (RESET IC) (ICK2) • SN74LS03NS (ICD3)
1-10	Invalid interrupt occurred	5	• μPD71059GB (ICU) (ICG1, ICH1) • ADDRESS, DATA or CONTROL pattern in ICU

* Refer to the 2-7-2. Remedy for error code "Error 2-05" on page 2-31.

Error code 2-*** (Error 2-***)

Errors that occur related to the SV-123 board
(servo)

Error code	Error content	Error level	Assumed malfunctioning parts
2-02	Error in DATA BUS	5	• CXD8139AQ (ICF4), SY-155 board (SV I/F circuit) • CXP80524 (CPU) (IC101), SV-123 board • 8P harness, SV-123 board
2-04	Error in RAM	5	- SV-123 board • CXP80524 (CPU) (IC101)
2-05*	BACKUP MEMORY for servo has been destroyed	5	Same as error code 1-05 (System backs up servo-system's DPG and AGC data)
2-10	Interrupt error during communications	5	- SV-123 board • CXP80524 (CPU) (IC101) • SV INT signal pattern • 8P harness
2-20	Position error inside cassette insertion part	5	• Cassette compartment (mechanical trouble) • Cassette compartment sensors (CC UP, CC DOWN signals) and harness
2-21	Malfunction inside cassette insertion part	5	• Cassette tape is stuck in the cassette compartment • Cassette compartment sensors (CC UP, CC DOWN signals) and harness • Cassette compartment motor and cassette compartment motor drive circuit (DR-139 board)
2-22	Position error on tape guide	5	• Mechanical deck (tape guide, pinch roller, etc.) • MD sensor (RE STOP, RE FWD, LIM SW signals) and harness
2-23	Malfunction of cassette loading motor	5	• Mechanical deck • MD sensor (RE STOP, RE FWD, LIM SW signals) and harness
2-24	Malfunction of pinch roller	5	• Loading motor and loading motor drive circuit (DR-139 board)
2-30	Malfunction of head drum motor	5	• Head drum • Drum motor and drum motor drive circuit (DR-139 board) • DFG sensor (drum FG) and harness

* Refer to the 2-7-2. Remedy for error code "Error 2-05" on page 2-31.

Error code	Error content	Error level	Assumed malfunctioning parts
2-31	Head drum motor doesn't revolve (Drum stopped)	5	• Head drum • DFG sensor and harness • Drum motor and drum motor drive circuit (DR-139 board)
2-32	Abnormal head drum rotation speed (Drum revolves at high speed)	5	• Drum motor drive circuit (DR-139 board) • DFG sensor and harness
2-33	Head drum motor doesn't stop	5	• Drum motor drive circuit (DR-139 board) • DFG sensor and harness
2-40	Capstan motor doesn't rotate	5	• Tape is wrapped around the pinch roller (or tape guide) • Capstan motor and capstan motor drive circuit (DR-139 board) • CFG sensor (capstan FG) and harness
2-41	Capstan motor won't stop	5	• Capstan motor drive circuit (DR-139 board) • CFG sensor and harness
2-50	Take-up reel motor won't revolve	5	• Reel motor • Tape end sensor • Cassette tape load is abnormal • TFG sensor (Take-up FG) and harness
2-51	Supply reel motor won't revolve	5	• Reel motor • Tape end sensor • Cassette tape load is abnormal • SFG sensor (supply FG) and harness
2-52	Take-up reel motor won't stop	5	• Take-up reel drive circuit (DR-139 board) • TFG sensor and harness
2-53	Supply reel motor won't stop	5	• Supply reel drive circuit (DR-139 board) • SFG sensor and harness
2-60	Abnormal tape travel motion	5	• Supply torque (torque value adjustment) • Tape guide and head drum, etc.
2-70	Condensation on head drum	5	• Condensation sensor

Error code3-*** (Error 3-***)

Errors that occur related to the SP-13 board (signal management)

Error code	Error content	Error level	Assumed malfunctioning parts
3-02	Error in DATA BUS	5	• CN10, 20P flexible wire • CXD8184AQ (ICD3) (SYS I/F circuit)
3-10	Error in clock system (forward head)	5	• CN9, 20P flexible wire • CXD1009Q (ICD9)
3-11	Error in clock system (reverse head)	5	• CN9, 20P flexible wire • CXD1009Q (ICJ9)
3-12	Error in clock system ("DAT FRAME")	5	• CN9, 20P flexible wire • CXD8185AQ (ICC3) • CXD1008Q (ICC9)

Error code4-*** (Error 4-***)

Errors that occur related to the DIO-10 board (digital I/O)

Error code	Error content	Error level	Assumed malfunctioning parts
4-02	Error in DATA BUS	4	• CN15 (SY-155 board), CN3 (DIO-10 board) 48P D-SUB connector • CXD8134Q (IC12) (SYS I/F CIRCUIT)

Error code5-*** (Error 5-***)

Errors that occur related to the TC-58 board (time code reader/generator)
(When the DABK-7030 option is installed)

Error code	Error content	Error level	Assumed malfunctioning parts
5-02	Error in DATA BUS	4	• CN11 (SY-155 board), CN2 (TC-58 board) 30P flexible wire • CXD8140Q (ICG4) (SYS I/F circuit)

Error code6-** (Error 6-**)

Errors that occur related to the MEM-40B board
(memory-start)

(When the DABK-7032 option is installed)

Error code	Error content	Error level	Assumed malfunctioning parts
6-01	Error in ADDRESS BUS	4	• CN13 (SY-155 board), CN1 (MEM-40A board) 48P D-SUB connector • CXD8163AQ (IC1) (SYS I/F circuit)
6-02	Error in DATA BUS	4	• CN13 (SY-155 board), CN1 (MEM-40A board) 48P D-SUB connector • CXD8163AQ (IC1) (SYS I/F circuit)
6-04	Error in RAM	4	• CN13 (SY-155 board), CN1 (MEM-40A board) 48P D-SUB connector • CXD8163AQ (IC1) (SYS I/F circuit) • TMS44C256-00 (IC2~IC9)

Error code8-** (Error 8-**)

Errors that occur related to the IF-283 board (RS
-232C Interface)

(When the DABK-7033 option is installed)

Error code	Error content	Error level	Assumed malfunctioning parts
8-02	Error in DATA BUS	4	• CN12 (SY-155 board) CN1 (RM-77 board) CN2 (RM-77 board) CN1 (IF-283 board) 30P flexible wire • IC1, 2, 3, 5 (RM-77 board) (SYS I/F circuit) • IC1 (IF-283 board) (SYS I/F circuit)

2-7-2. Remedy for error code "Error 2-05"

The SWP position DPG data and ATF playback AGC data are stored in the backup RAM of the SY-155B board. When the backup RAM is initialized if the SY-155B board's lithium battery is exhausted or the ROM chip has been improperly mounted, "Error 1-05" (backup memory destroyed) as well as "Error 2-05" occurs. In this case, write both servo-data into the backup RAM in the following way.

Procedure

Step 1. Opening the test menu in the service menu

- (1) Press the SET key while holding down the STOP key and the DISPLAY key. The service menu opens.

"[dSPly] cLoSE"

- (2) While pressing the MENU key, turn the search dial and set the following display.

"[tESt] cLoSE"

Next, while pressing the DATA key, turn the search dial and set the display to "oPen", and press the SET key. The test menu in the service menu opens.

"[tESt] oPen"

- (3) While pressing the MENU key, turn the search dial and set the following display.

"[trnSP] cLoSE"

Next, while pressing the DATA key, turn the search dial and set the display to "oPen", and press the SET key. The servo menu in the test menu opens.

"[trnSP] oPen"

Step 2. Writing the DPG data into RAM

- (1) While pressing the MENU key, turn the search dial and set the following display.

"dPG Adj 00 oFF"

↑
DPG data

- (2) Insert the test tape TY-7111D, and press the PLAY key to put it in the playback mode.
- (3) While pressing the DATA key, turn the search dial and set the display to "on", and press the SET key.

- (4) If the DPG data is other than 00, while pressing the DATA key, turn the search dial and set the display to "oFF", and press the SET key.

The DPG data is read into the backup RAM.
DPG data's guideline : 5 * to 6 *

Step 3. Writing the AGC data into RAM

- (1) While pressing the MENU key, turn the search dial and set the following display.

"AGc Adj 00 00 oFF"

↑
AGC data

- (2) Insert the test tape TY-7111D, and press the PLAY key to put it in the playback mode.
- (3) While pressing the DATA key, turn the search dial and set the display to "on", and press the SET key.

The display will change from being lit steadily to flashing, and begin automatic adjustment.

- (4) If the display changes from flashing to being lit steadily, while pressing the DATA key, turn the search dial and set the display to "oFF", and press the SET key.

The AGC data is read into the backup RAM.
If an "Error" display appears, perform steps (3) and (4) above.

AGC data guideline : 1 * to 2 *

Step 4. Confirmation

- (1) After turning the power off, turn it on again. Confirm that "ERROR 1-05" or "ERROR 2-05" are not displayed.
- (2) Playback a pre-recorded (music sound) tape. Confirm that the SERVO indicator of the front panel is lit, and that the sound is coming out.
- (3) Record the audio signals in the assemble mode. After recording, playback the tape. Confirm that the SERVO indicator of the front panel is lit, and that the sound is coming out.

Note : If "ERROR 1-05" incessantly occurs, the lithium battery may be exhausted. In this case, it is necessary to replace it.

2-8. SERVICE MENU

The SERVICE MENU consists of the following two submenus.

DISPLAY MENU : Displays data such as the hour meter and FS counter.

TEST MENU : Execute self-diagnosis and each adjustment mode.

You can enter/exit (OPEN/CLOSE) the SERVICE MENU using the STOP, DISPLAY, SET, and RESET keys on the front panel as follows.

To enter the SERVICE MENU

Press the STOP, DISPLAY, and SET keys simultaneously (press all three keys at the same time). When you enter the SERVICE MENU, the first item of the SERVICE MENU will appear on the FL tube display.

FL tube display message : [dSPly] cLoSE

To exit the SERVICE MENU

Press the STOP, DISPLAY, and RESET keys simultaneously (press all three keys at the same time).

Notes :

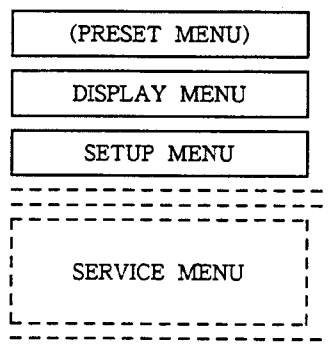
- The OPEN/CLOSE status of the SERVICE MENU and the SERVICE MENU settings will not be stored in the backup memory.

In other words, all settings are canceled when you turn OFF the power.

- When you turn ON the power, the SERVICE MENU status will be CLOSE.

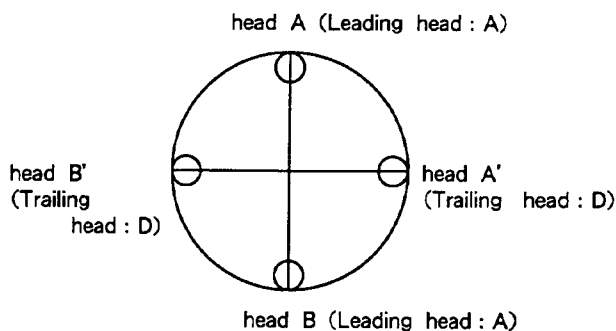
You can set and modify each item in the SERVICE MENU (DISPLAY MENU and TEST MENU) using the MENU, SET, RESET, and DATA keys and the SEARCH dial on the front panel. The setting data will be displayed in the Tape Time Area and Work Area of the FL tube display.

The SERVICE MENU follows the SETUP MENU in the menu hierarchy.



Head nomenclature

The four heads on the drum of this unit, as in the diagram below, include two Leading system heads (heads A and B) and two Trailing head system (heads A' and B').

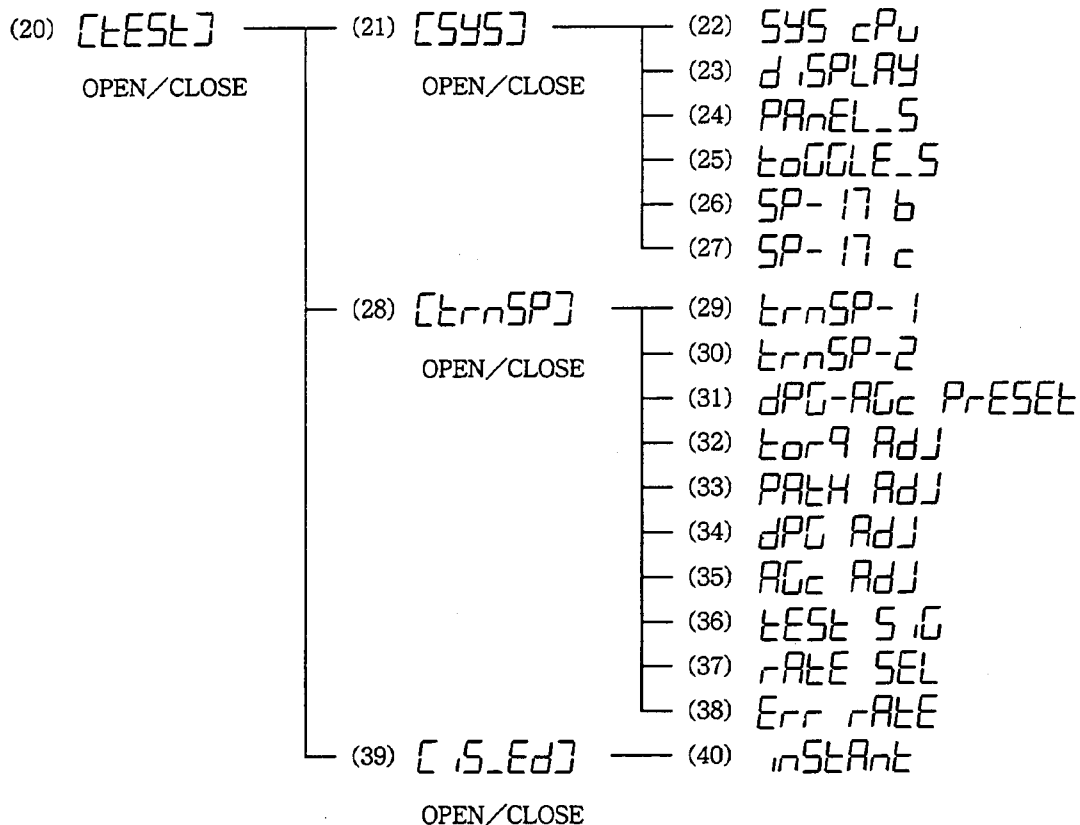
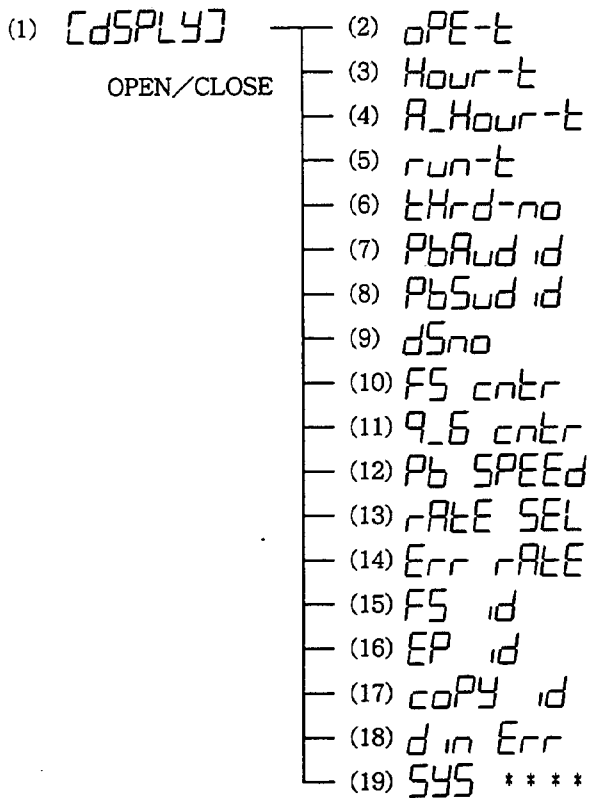


The nomenclature for these is as below :

nomenclature

- + (plus) azimuth head : A and A'
- (minus) azimuth head : B and B'
- Leading head : (A-A, A-B) or (A, B)
- Trailing head : (D-A, D-B) or (A', B')

2-8-1. SERVICE MENU Structure



2-8-2. SERVICE MENU items

(1) [dSPLY] (Display)

Selects/cancels (OPEN/CLOSE) DISPLAY MENU items ((2) to (19)) in the SERVICE MENU.

Specification conditions : None

Specification method :

Hold down the DATA key and turn the SEARCH dial. Then, press the SET key to specify OPEN /CLOSE.

1) Enter (OPEN) the SERVICE MENU.

FL tube display message : [dSPLY] cLoSE

To select (OPEN) a DISPLAY MENU item

2) Hold down the DATA key and turn the SEARCH dial until the following message appears. Then, press the SET key.

FL tube display message : [dSPLY] oPeN
(flashing → ON)

3) After you enter (OPEN) the DISPLAY MENU, hold down the MENU key and turn the SEARCH dial to select the required DISPLAY MENU item ((2) to (18)). (Turn the dial until the required item appears on the FL tube display.)

To cancel (close) a DISPLAY MENU item

2) Hold down the DATA key and turn the SEARCH dial until the following message appears. Then, press the SET key.

FL tube display message : [dSPLY] cLoSE
(flashing → ON)

The DISPLAY MENU items ((2) to (18)) are listed below. After you enter (OPEN) the DISPLAY MENU, hold down the MENU key and turn the SEARCH dial to select the required DISPLAY MENU item ((2) to (18)). (Turn the dial until the required item appears on the FL tube display.)

Uses of the DISPLAY MENU items

HOURLY METER : "oPE-t," "Hour-t," "run-t," and "thrd-no"

- Indicates the time to perform head cleaning and time to replace the drum, mechanism deck, and cassette compartment.

PB MAIN ID

: "Pb Aud id"

- Main ID data during CAUTION 1-01 (main ID invalid).

- Copy ID data.

PB SUB ID

: "Pb Sub id"

- Sub-ID data during CAUTION 1-02 (sub-ID invalid).

FS COUNTER

: "Fs cnt"

- Checks the EXT SYNC (the input Fs can be counted backward using the display data).

9.6K COUNTER

: "9.6 cnt"

- Checks the VARI control clock to be input from REMOTE 37P (the input signal frequency is counted backward using the display data).

ERROR RATE

: "Err rAtE"

- Error rate when the PB CONDITION TALLY (when the SET UP PB COND : BAD CONDITION is set) turns ON (lights when the condition deteriorates beyond 8×10^{-2}).

- Measurement after replacing a drum and mechanism deck.

- Measurement after servo-related adjustments (torque, tape path, DPG, AGC).

- Measurement after RF-related adjustments (recording current, RF PLL).

FS ID

: "Fs id"

- Fs (Sampling frequency) ID data

EMPHASIS ID

: "EP id"

- EMPHASIS ID data

COPY ID

: "coPY id"

- COPY ID data

DIN ERROR

: "din Err"

- Error cause for flashing "D-I" message on FL tube display

- Pro/consumer data of input digital audio signal

- (2) oPE-t (Operation Time) : Current-carrying hour meter

Displays the current-carrying time of the unit (total time during which the unit's power was ON) in the Work Area of the FL tube display.
FL tube display message (Work Area) :

```

 ** ** * (H)
  |
  +--> 00 00 0(00000)
        }
        99 99 9(99999) (H)
  
```

Factory setting :00 00 0(00000)

- (3) Hour-t (Hour Time) : Drum rotation hour meter
Displays the hours for which a drum has rotated in the Work Area of the FL tube display. Use this as guideline to replace the drum assembly.
FL tube display message (Work Area) :

```

 ** ** * (H)
  |
  +--> 00 00 0(00000)
        }
        99 99 9(99999) (H)
  
```

Factory setting :00 00 0(00000)

- (4) A-Hour-t (Additional Integrated Hour Meter) :

Drum rotation hour meter

Displays the total time for which a drum has rotated in the Work Area of the FL tube display.
FL tube display message (Work Area) :

```

 ** ** * (H)
  |
  +--> 00 00 0(00000)
        }
        99 99 9(99999) (H)
  
```

Factory setting :00 00 0(00000)

- (5) run-t (Running Time) : Tape running hour meter
Displays the total time for which a tape was running in the Work Area of the FL tube display.
FL tube display message (Work Area) :

```

 ** ** * (H)
  |
  +--> 00 00 0(00000)
        }
        99 99 9(99999) (H)
  
```

Factory setting :00 00 0(00000)

- (6) tHrd-no (Threading Number) : Meter for the threading/unthreading operation of a tape
Displays the total number of threading and unthreading operations of a tape in the Work Area of the FL tube display.

FL tube display message (Work Area) :

```

 ** ** * (times)
  |
  +--> 00 00 0(00000)
        }
        99 99 9(99999) (H)
  
```

Factory setting :00 00 0(00000)

(7) PB Aud id (PB Main ID Data)

Displays the main ID data recorded on the playback tape in the Work Area of the FL tube display.

FL tube display message (Work Area) :

* * * * *
⑧ ⑦ ⑥ ⑤ ④ ③ ② ①

No.	ID Name	Display	Description
①	Format ID	0 1 2 3	AUDIO USE Reserved Reserved Reserved
②	ID1, Emphasis	0 1 2 3	OFF 50/15 μ sec Reserved Reserved
③	ID2, Fs	0 1 2 3	48kHz 44.1kHz 32kHz Reserved
④	ID3, Number of Channel	0 1 2 3	2channels 4channels Reserved Reserved
⑤	ID4, Quantization	0 1 2 3	16-bits linear 12-bits non linear Reserved Reserved
⑥	ID5, Track pitch	0 1 2 3	Normal Wide Reserved Reserved
⑦	ID6, Copy	0 1 2 3	Permitted Reserved Prohibited Pre recorded
⑧	ID7, pack contents	—	—

(8) Pb Sub id (PB Sub ID Data)

Displays the sub-ID data recorded on the playback tape in the Work Area of the FL tube display.

FL tube display message (Work Area) :

- * * * - * * *
④ ③ ② ①

No.	ID Name	Display	Description
①	Data ID	0	When 0, it has the meaning of ② ③ ④ below When not 0, it is invalid.
②	Control ID	4-bit Hex.	
③	Pack ID	0 ~ 7	Number of recorded packs.
④	P No.	000 799 0AA 0BB 0EE	program number invalid lead in area lead out area (END ID)

(9) dSno (Sample Number)

Displays the difference between TAGET TC and PB TC by a word unit on the FL tube display.

FL tube display message (Work Area) :

Sign 0 0 0 ** ** (Word)

When the difference exceeds FFFFH, the data will flash.

(10) FS cntr (Fs Counter)

Displays the counter data of the EXT SYNC signal in the Work Area of the FL tube display.

FL tube display message (Work Area) :

- - - - * * * * (Hex.)

$$\text{Fs counter (Hex.)} = \frac{\text{Counter clock frequency (Hz)} \times 256}{\text{EXT clock frequency (Hz)}}$$

Counter clock 48kHz : 6.1440MHz
(128Fs) 44.1kHz: 5.6448MHz

(11) 9.6 cntr (9.6K Counter)

Displays the counter data of the 9.6K clock signal input from the remote 37P in the Work Area of the FL tube display.

FL tube display message (Work Area) :

**** **** (HEX)
② ①

① Moving average of the 9.6K counter (average for 8 times)

② 9.6K counter value

$$\text{9.6K counter (Hex.)} = \frac{\text{Counter clock frequency (Hz)} \times 256}{\text{9.6K clock frequency (Hz)}}$$

Counter clock 48kHz : 1.536MHz
(32Fs) 44.1kHz: 1.4112MHz

(12) Pb SPEEd (PB Speed)

Displays the VARI speed data executed during VARI mode in the Work Area of the FL tube display.

FL tube display message (Work Area) :

Sign * * * %

Example of message :- 12 5 → 12.5 %

(13) rAtE SEL (Error Rate Select)

Selects and sets the head (Leading or Trailing) and channel (A or B) whose playback data will be used during Err rAtE (error rate is displayed).

Specification conditions :

The "tEST SiG" of the STOP mode and test menu must be OFF.

Specification method :

Hold down the DATA key and turn the SEARCH dial to display the required item on the FL tube display. Then, press the SET key. The items to be selected are listed below.

Display	Playback data to be selected
Auto	Complies with the recording system mode (RAW/RMW). • RMW : Average of Leading head A and B channels • RAW : Average of Trailing head A and B channels
d-Ab	Average of Trailing head A and B channels
d-A	Trailing head A channel
d-b	Trailing head B channel
A-Ab	Average of Leading head A and B channels
A-A	Leading head A channel
A-b	Leading head B channel

When you press the SET key, the display data will be selected (flashing → ON).

Note : When you select data besides "Auto," the ALARM indicator on the front panel will flash.

(14) Err rAtE (Error Rate)

Displays the error rate calculated from the playback data of the head and channel selected in the "rAtE SEL" menu, in the Work Area of the FL tube display. (Ignore fractions following two decimal places.)

FL tube display message (Work Area) :

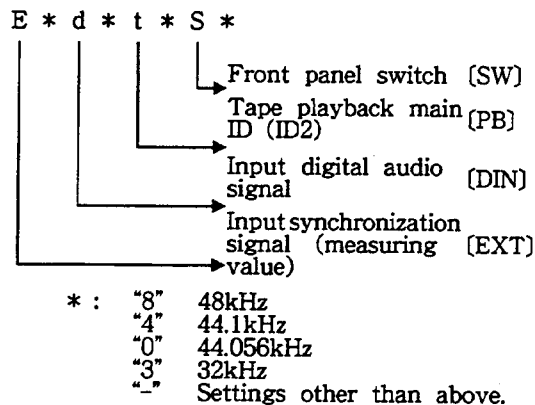
_-* (= *.* × 10^{-*})

Example of message : 1_0-4 → 1.0 × 10⁻⁴

Note : No error rate will be displayed for invalid measurement data. Only a dashed line (- - - - -) will appear.

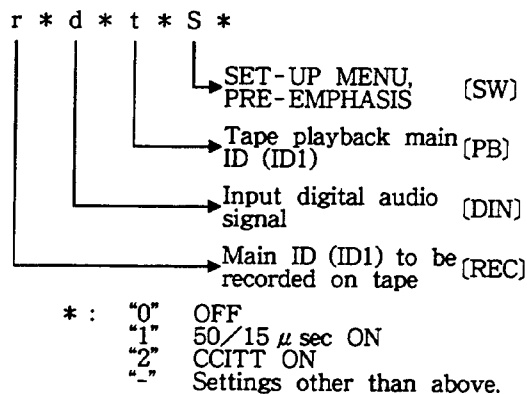
- (15) FS id (Fs ID) : Displays each Fs ID in the Work Area of the FL tube display.

FL tube display message (Work Area) :



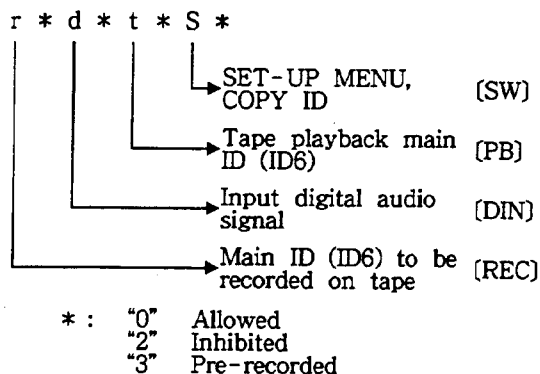
- (16) EP id (EMPHASIS ID) : Displays each EMPHASIS ID in the Work Area of the FL tube display.

FL tube display message (Work Area) :



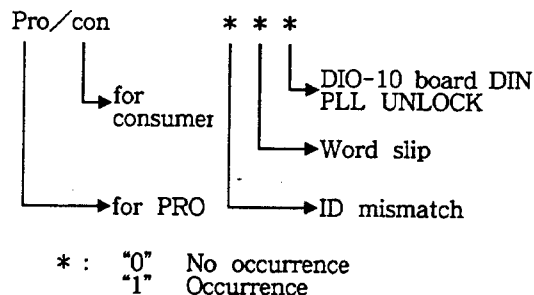
- (17) coPY id (COPY ID) : Displays each COPY ID in the Work Area of the FL tube display.

FL tube display message (Work Area) :



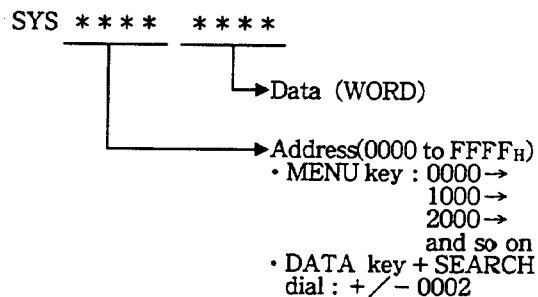
- (18) din Err (DIN ERROR) : Displays (in the Work Area) the error cause for the flashing "D-I" message on the FL tube as well as the pro/consumer data of input digital audio signal.

FL tube display message (Work Area) :



- (19) SYS * * * * (SYSCOM RAM data) : Displays the system component RAM data (64k byte) in the Work Area of the FL tube display.

FL tube display message (Work Area) :



- (20) [tEST] (Test)

Selects/cancels (OPEN/CLOSE) the TEST MENU items in the SERVICE MENU.

Specification conditions : None

Specification method :

Hold down the DATA key and turn the SEARCH dial. Then, press the SET key to specify OPEN/CLOSE.

- 1) Enter (OPEN) the SERVICE MENU.

FL tube display message : [dSPly] cLoSE

To select (OPEN) a TEST MENU item

- 2) Hold down the MENU key and turn the SEARCH dial until the following message appears.

FL tube display message : [tEST] cLoSE

- 3) Hold down the DATA key turn the SEARCH dial until the following message appears. Then, press the SET key.

FL tube display message : [tEST] oPEn
(flashing → ON)

To cancel (close) a TEST MENU item

- 2) Hold down the DATA key and turn the SEARCH dial until the following message appears. Then, press the SET key.

FL tube display message : [tEST] cLoSE
(flashing → ON)

(21) [SYS] (System control)

Selects/cancels (OPEN/CLOSE) the System control related test items in the TEST MENU. The test items are : (22) SYS cPu, (23) diSPLAY, (24) PAnEL-S, and (25) toGGLE-S, (26) SP-17b, (27) SP-17c

Specification conditions : None

Specification method :

Hold down the DATA key and turn the SEARCH dial. Then, press the SET key to specify OPEN/CLOSE.

- 1) Enter (OPEN) the SERVICE MENU.
- 2) Enter (OPEN) the TEST MENU.

FL tube display message : [tEST] oPEn

To select (OPEN) a TEST MENU item

- 3) Hold down the MENU key and turn the SEARCH dial until the following message appears.

FL tube display message : [SYS] cLoSE

- 4) Hold down the DATA key and turn the SEARCH dial until the following message appears. Then, press the SET key.

FL tube display message : [SYS] oPEn
(flashing → ON)

- 5) After System control is executed (OPEN), hold down the MENU key and turn the SEARCH dial to select the required test item ((22) to (27)).

To cancel (close) a TEST MENU item

- 6) Hold down the DATA key and turn the SEARCH dial until the following message appears. Then, press the SET key.

FL tube display message : [SYS] cLoSE
(flashing → ON)

The TEST MENU items ((22) to (27)) are listed below. After you enter (OPEN) the [SYS] MENU, hold down the MENU KEY AND turn the SEARCH dial to select the required TEST MENU item. (Turn the dial until the required item appears on the FL tube display.)

(22) [SYS cPu] (System control CPU)

Tests the address bus, data bus, ROM, and RAM of the System control CPU.

Specification conditions : STOP mode

Specification method :

Start/cancel the test mode using the SET, DATA, and RESET keys.

- 1) Enter (OPEN) the SERVICE MENU.
- 2) Enter (OPEN) the TEST MENU ([tEST]).
- 3) Enter (OPEN) the [SYS] MENU.

FL tube display message : [SYS] oPEn

- 4) Hold down the MENU key and turn the SEARCH dial until the following message is displayed.

FL tube display message : [SYS cPu] tEST
(rapid flashing)

Starting the test

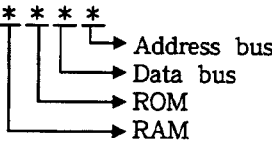
- 5) Press the SET key.

The display message "tEST" will flash at a slower speed than before, indicating the start of the test.

(Approximately 6 seconds)

- 6) After the test ends, the results appear in the Work Area of the FL tube display.

Results (Work Area of the FL tube display) :

Result	Work Area Display
① No error	no Error
② Error	* * * * *  Address bus Data bus ROM RAM When an error is detected, a "1" is indicated at the corresponding position.

Canceling the test

- 7) Press the DATA and RESET keys simultaneously.

The display message "tEst" will flash at a higher speed than before, indicating the suspension of the test.

(23) [diSPLAY] (Display Test)

Tests the FL tube display and indicator lamps.

Specification conditions : STOP mode

Specification method :

Start/cancel the test mode using the SET, DATA, and RESET keys.

- 1) Enter (OPEN) the SERVICE MENU.
- 2) Enter (OPEN) the TEST MENU ([tEst]).
- 3) Enter (OPEN) the [SYS] MENU.

FL tube display message : [SYS] oPEn

- 4) Hold down the MENU key and turn the SEARCH dial until the following message appears.

FL tube display message : diSPLAY tEst (rapid flashing)

Starting the test

- 5) Press the SET key.
- 6) The FL tube display and the LED indicator lamps of the front panel will light in the following sequence (cycle).
 - ① All lamps will turn ON. → ② The LED indicator lamps will turn ON one after another. → ③ The segments (0 to 31) of the FL tube display will turn ON one after another. → ④

The grids (0 to 7) of the FL tube display will turn ON one after another. → ①

During the test mode, the FL tube display and indicator lamps will light in the above cycle ① to ④. (Approximately 40 seconds per cycle)

Canceling the test

- 7) Press the DATA and RESET keys simultaneously.

(24) [PAneL-S] (Panel Switch Test)

Tests the connections of each front panel key switch.

Specification conditions : STOP mode

Specification method :

Start/cancel (stop) the test mode using the SET, DATA, and RESET keys.

- 1) Enter (OPEN) the SERVICE MENU.
- 2) Enter (OPEN) the TEST MENU ([tEst]).
- 3) Enter (OPEN) the [SYS] MENU.

FL tube display message : [SYS] oPEn

- 4) Hold down the MENU key and turn the SEARCH dial until the following message appears.

FL tube display message : PAneL tEst (rapid flashing)

- 5) Press the SET key.

- 6) Test method

Press all 26 key switches on the front panel one by one. If the bit corresponding to each key switch displayed in the Work Area of the FL tube display is a "1," that key is good. (See the table below.)

After you press all keys, the test results will be displayed in the Work Area of the FL tube display.

Results (Work Area on the FL tube display) :

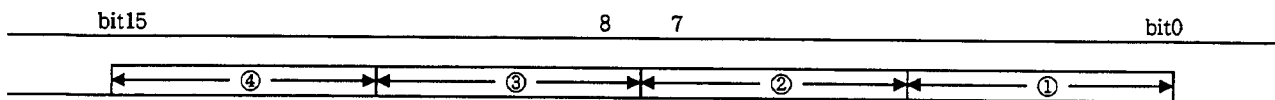
Result	Work Area Display
No error	no Error
Error	- * * * * (HEX) ⑦ ⑥⑤ ④③ ②① When data displayed in HEX is converted to binary, the key switches that correspond to the bits that have become 0 are inoperative. example F FF FF dF (HEX display) ② ↓ 1101 (Binary display) ↓ bit5 is 0 ↓ CUE switch is inoperative

Canceling the test

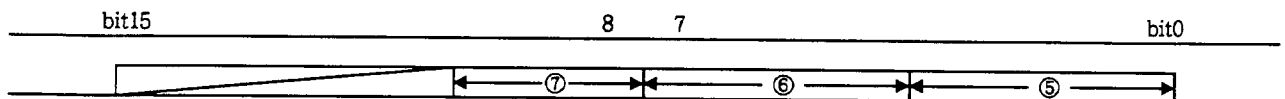
- 7) Press the DATA and RESET keys simultaneously.

Corresponding table for bits and key switch

- * * * * (Hex.)
 ⑦ ⑥⑤ ④③ ②①



bit NO.	Key switch
bit0	EJECT ▲
1	STOP ■
2	STANDBY ▶
3	FF ▶▶
4	REW ◀◀
5	CUE
6	PLAY ▶
7	REC ●
8	SID WRITE
9	SID ERASE
10	SID NEXT ▶▶
11	SID PREVIOUS ◀◀
12	LOCATE
13	VARI
14	CHASE
15	MONITOR



bit NO.	Key switch
bit0	MARK
1	DISPLAY
2	MENU
3	DATA
4	SET
5	RESET
6	MEMORY START
7	SUB INSERT
8	AUDIO INSERT
9	ASSEMBLE

(25) [toGGLE-S] (Toggle Switch Test)

Tests the connections of the toggle switch and SEARCH dial on the front panel; of the TC EXT/INT switch (when it is installed with the optional DABK-7030) and D-I/WORD switch on the rear panel.

Specification conditions : STOP mode

Specification method :

Start/cancel the test mode using the SET, DATA, and RESET keys.

1) Enter (OPEN) the SERVICE MENU.

2) Enter (OPEN) the TEST MENU ([tEST]).

3) Enter (OPEN) the [SYS] MENU.

FL tube display message : [SYS] oPEN

4) Hold down the MENU key and turn the SEARCH dial until the following message appears.

FL tube display message : toGGLE-S tEST
(rapid flashing)

5) Press the SET key.

6) Test method

① Switch the front panel toggle switch (REMOTE/LOCAL, EXT/INT, ANALOG/DIGITAL, FS 44.1K/FS 48K).

② Turn the SEARCH dial in both directions.

③ Switch the D-I/WORD switch on the connector panel.

④ Switch the TC INT/EXT switch on the connector panel.

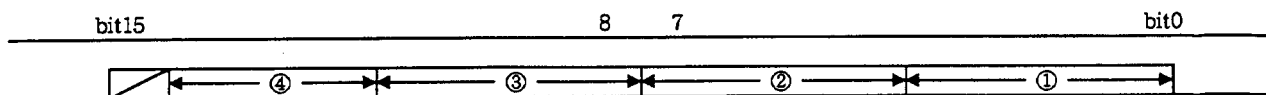
7) The test results will be displayed in the Work Area of the FL tube display as shown in the table below.

Results (Work Area on the FL tube display) :

Result	Work Area Display
No error	no Error
Error	--- * * * * (Hex.) ④ ③ ② ① When data displayed in HEX is converted to binary, the key switches that correspond to the bits that have become 0 are inoperative.

Corresponding table for bits and key switches

--- * * * * (Hex.)
 ④ ③ ② ①



bit NO.	Key switch
bit0	REMOTE
1	LOCAL
2	EXT
3	INT
4	VIDEO
5	ANALOG
6	DIGITAL
7	FS 44.1K
8	FS 48K
9	DIAL FWD (clockwise)
10	DIAL REV (counter clockwise)
11	WORD (DIO OPTION)
12	DI (DIO OPTION)
13	TC INT (TC OPTION)
14	TC EXT (TC OPTION)

(26) SP-17b (SP-17B Test) : Checks the SP-17B board used for the SYNC REC mode.

Specification conditions :

- STOP modes
- The SP-17B board must be installed (no testing is required if the MEM-40B (DABK-7032 option) board is installed).

Specification method :

Use the SET, DATA, and RESET keys to start and cancel the test.

- 1) Enter (OPEN) the SERVICE MENU.
- 2) Enter (OPEN) the TEST MENU.
- 3) Select (OPEN) the [SYS] mode.

FL tube display message : [SYS] oPeN

- 4) Hold down the MENU key and turn the SEARCH dial until the following message appears.

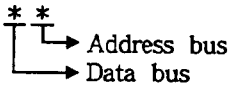
FL tube display message : [SP-17B] tESt

- 5) Press the SET key.

The Work Area message "tESt" will flash at a slower speed than before, indicating the start of the test.

- 6) After the test ends, the results will be displayed in the Work Area of the FL tube display.

Results (Work Area of the FL tube display) :

Result	Work Area Display
No error	no Error
Error	 The item corresponding to the bit containing a "1" is defective.

Canceling the test

- 7) Press the DATA and RESET keys simultaneously.

(27) SP-17c (SP-17C Test) : Checks the SP-17C board used for the SYNC REC mode.

Specification conditions :

- STOP modes
- The SP-17C board must be installed.

Specification method :

Use the SET, DATA, and RESET keys to start and cancel the test.

- 1) Enter (OPEN) the SERVICE MENU.
- 2) Enter (OPEN) the TEST MENU.
- 3) Select (OPEN) the [SYS] mode.

FL tube display message : [SYS] oPeN

- 4) Hold down the MENU key and turn the SEARCH dial until the following message appears.

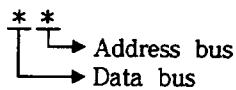
FL tube display message : [SP-17c] tESt

- 5) Press the SET key.

The Work Area message "tESt" will flash at a slower speed than before, indicating the start of the test.

- 6) After the test ends, the results will be displayed in the Work Area of the FL tube display.

Results (Work Area of the FL tube display) :

Result	Work Area Display
No error	no Error
Error	 The item corresponding to the bit containing a "1" is defective.

Canceling the test

- 7) Press the DATA and RESET keys simultaneously.

(28) [trnSP] (Transport)

Selects/cancels (OPEN/CLOSE) the mechanism deck and servo (SV) related test and adjustment items in the TEST MENU. The test items are : (29) trn SP-1, (30) trn SP-2, (31) dPG AGc PrESet, (32) torq Adj, (33) PAth Adj, (34) dPC Adj, (35) AGc Adj, (36) tESt SiG, (37) rAtE SEL, and (38) Err rAtE.

Specification conditions : None

Specification method :

Hold down the DATA key and turn the SEARCH dial. Then, press the SET key to specify OPEN/CLOSE.

1) Enter (OPEN) the SERVICE MENU.

2) Enter (OPEN) the TEST MENU (tEst).

FL tube display message : [tEst] oPEn

To select (OPEN) the Transport test item

3) Hold down the MENU key and turn the SEARCH dial until the following message appears.

FL tube display message : [trnSP] cLoSE

4) Hold down the DATA key and turn the SEARCH dial until the following message appears. Then, press the SET key.

FL tube display message : [trnSP] oPEn
(flashing → ON)

5) After Transport is selected (OPEN), hold down the MENU key and turn the SEARCH dial to select the required test item ((29) to (38)).

To cancel (close) the Transport test item

6) Hold down the DATA key and turn the SEARCH dial until the following message is displayed. Then, press the SET key.

FL tube display message : [trnSP] cLoSE
The TEST MENU items ((29) to (38)) are listed below. After you enter (OPEN) the [trnSP] MENU, hold down the MENU key and turn the SEARCH dial to select the required Transport test item. (Turn the dial until the required item appears on the FL tube display.)

(29) [trn SP-1] (Transport-1)

Tests the cassette compartment, loading motor, drum motor, reel motor, and capstan motor operations.

Specification conditions :

No cassette (Do not insert a cassette.)

Specification method :

Start/cancel (stop) the test mode using the SET, DATA, and RESET keys.

1) Enter (OPEN) the SERVICE MENU.

2) Enter (OPEN) the TEST MENU ([tEst]).

3) Enter (OPEN) the [trnSP] MENU.

FL tube display message : [trnSP] oPEn

4) Hold down the MENU KEY AND turn the SEARCH dial until the following message appears.

FL tube display message : trnSP-1 tEst (rapid flashing)

5) Press the SET key without loading a cassette. The display message "tEst" will flash at a slower speed than before, indicating the start of the test.

6) Test method

Load a cassette. When you load a cassette, the following operations are automatically checked. Cassette loading. → Cassette eject operation (checks the cassette compartment). → Loading operation. → Drum rotation operation. → Reel motor and capstan rotation operations. → End. These operation checks are started about 10 seconds after you load a cassette.

7) After the operations are checked, the test results will be displayed in the Work Area of the FL tube display as shown in the table below.

Results (Work Area on the FL tube display) :

Result	Work Area Display
No error	no Error
Error	** ** ** ** ⑧⑦ ⑥⑤ ④③ ②① The tested item corresponding to the bit containing a "1" is defective. ① Cassette compartment ② Loading motor ③ Brake ④ Cassette hole sensor switch ⑤ Take-up reel ⑥ Supply reel ⑦ Capstan motor ⑧ Drum motor

Canceling the test

8) Press the DATA and RESET keys simultaneously.

(30) [trn SP-2] (Transport-2)

Tests the pinch roller operation.

Specification conditions :

No cassette (Do not insert a cassette.)

Specification method :

Start/cancel (stop) the test mode using the SET, DATA, and RESET keys.

- 1) Enter (OPEN) the SERVICE MENU.
- 2) Enter (OPEN) the TEST MENU ([tEst]).
- 3) Enter (OPEN) the [trnSP] MENU.

FL tube display message : [trnSP] oPEn

- 4) Hold down the MENU key and turn the SEARCH dial until the following message appears.

FL tube display message : trnSP-2 tEst (rapid flashing)

- 5) Press the SET key without loading a cassette. The display message "tEst" will flash at a slower speed than before, indicating the start of the test.

The pinch roller will repeat loading and unloading operations 5 times.

Canceling the test

- 6) Press the DATA and RESET keys simultaneously.

(31) [dPG-AGc] (DPG-AGC Preset)

Presets the DPG and AGC data before performing the torque, tape path, DPG and AGC adjustments.

Specification conditions :

No cassette (Do not load a cassette.)

Specification method :

Preset the DPG and AGC data using the DATA and SET keys.

- 1) Enter (OPEN) the SERVICE MENU.
- 2) Enter (OPEN) the TEST MENU ([tEst]).
- 3) Enter (OPEN) the [trnSP] MENU.

FL tube display message : [trnSP] oPEn

- 4) Hold down the MENU key and turn the SEARCH dial until the following message appears.

FL tube display message : dPG-AGc PrESet

- 5) Press the DATA and SET keys simultaneously. The DPG data (60 (H)) and AGC data (A channel : 20 (H), and B channel : 20 (H)) will be set.

(32) [torq Adj] (Torque Adjustment)

To perform the reel torque adjustment, use this menu to specify the adjustment mode. Use this menu also to display the speed during the CUE mode.

Specification conditions : None

Specification method :

Hold down the DATA key and turn the SEARCH dial. Then, press the SET key to turn ON/OFF the adjustment mode.

- 1) Enter (OPEN) the SERVICE MENU.
- 2) Enter (OPEN) the TEST MENU ([tEst]).
- 3) Enter (OPEN) the [trnSP] MENU.

FL tube display message : [trnSP] oPEn

- 4) Hold down the MENU key and turn the SEARCH dial until the following message appears.

FL tube display message : torq Adj oFF

- 5) Hold down the DATA key and turn the SEARCH dial until the following message appears.

FL tube display message : torq Adj on

- 6) Press the SET key to turn ON the adjustment mode. Perform each torque adjustment under this condition. See section 4-3. Mechanism Adjustment for the adjustment methods.

Note : When you set the adjustment mode to ON, the ALARM indicator on the front panel will flash.

Setting the adjustment mode OFF

- 1) Hold down the DATA key and turn the SEARCH dial until the following message appears. Then, press the SET key.

FL tube display message : torq Adj oFF

The Work Area of the FL tube display indicates the speed during the CUE mode besides the ON /OFF data of the test mode.

Data (Work Area of the FL tube display) :

* * * * OFF (on)
 ↑
 CUE speed data Display

- Other than the CUE mode : - - - -
- STILL mode : 0
- (-) 1/5 : (-) 0_2
- (-) 1/2 : (-) 0_5
- (-) 1 : (-) 1
- (-) 3 : (-) 3
- (-) 8 : (-) 8
- (-) 16 : (-) 16

(33) [PatH Adj] (Path Adjustment)

To perform the tape path adjustment, use this menu to specify the adjustment mode.

Specification conditions : None

Specification method :

Hold down the DATA key and turn the SEARCH dial. Then, press the SET key to turn ON/OFF the adjustment mode.

- 1) Enter (OPEN) the SERVICE MENU.
- 2) Enter (OPEN) the TEST MENU ([tEst]).
- 3) Enter (OPEN) the [trnSP] MENU.
 FL tube display message : [trnSP] oPEn
- 4) Hold down the MENU key and turn the SEARCH dial until the following message appears.
 FL tube display message : PatH Adj oFF
- 5) Hold down the DATA key and turn the SEARCH dial until the following message appears.
 FL tube display message : PatH Adj on
- 6) Press the SET key to turn ON the adjustment mode.

Perform each tape path adjustment under this condition. See section 4-4. Tape Path Adjustment for the adjustment methods.

Note : When you set the adjustment mode to ON, the ALARM indicator on the front panel will flash.

Setting the adjustment mode OFF

- 7) Hold down the DATA key and turn the SEARCH dial until the following message appears. Then, press the SET key.

FL tube display message : PatH Adj oFF

(34) [dPG Adj] (DPG Adjustment)

To perform the SWP adjustment of the servo block, use this menu to specify the adjustment mode. The adjusted data is stored in the backup memory of System control when you set the adjustment mode to OFF.

Specification conditions : None

Specification method :

Hold down the DATA key and turn the SEARCH dial. Then, press the SET key to turn ON/OFF the adjustment mode.

- 1) Enter (OPEN) the SERVICE MENU.
- 2) Enter (OPEN) the TEST MENU ([tEst]).
- 3) Enter (OPEN) the [trnSP] MENU.
 FL tube display message : [trnSP] oPEn
- 4) Hold down the MENU key and turn the SEARCH dial until the following message appears.
 FL tube display message : dPG Adj oFF
- 5) Hold down the DATA key and turn the SEARCH dial until the following message appears.
 FL tube display message : dPG Adj on
- 6) Press the SET key to turn ON the adjustment mode. Perform the SWP adjustment under this condition. See the section 4-5. Servo Block Adjustment for the adjustment methods.

Note : When you set the adjustment mode to ON, the ALARM indicator on the front panel will flash.

Setting the adjustment mode OFF

- 7) Hold down the DATA key and turn the SEARCH dial until the following message appears. Then, press the SET key.

FL tube display message : dPG Adj * * oFF

↑
 Data stored in the backup memory.

After the adjustment, the adjusted data will be stored in the backup memory when you set the adjustment mode to OFF. The stored data will be displayed in the Work Area of the FL tube display.

Data (Work Area of the FL tube display) :

* * oFF
↑
Data stored in the backup memory.

(35) [AGc Adj] (AGC Adjustment)

Performs the gain adjustment of the AGC. When you set this adjustment mode to ON, the SV CPU will automatically perform the adjustment. The adjusted gain data will be stored in the backup memory of System control.

Specification conditions : None

Specification method :

Turn ON/OFF the adjustment mode using the SET, DATA, and RESET keys.

- 1) Enter (OPEN) the SERVICE MENU.
- 2) Enter (OPEN) the TEST MENU ([tEst]).
- 3) Enter (OPEN) the [trnSP] MENU.
FL tube display message : [trnSP] oPEn
- 4) Hold down the MENU key and turn the SEARCH dial until the following message appears.

FL tube display message : AGc Adj oFF

- 5) Hold down the DATA key and turn the SEARCH dial until the following message appears.

FL tube display message : AGc Adj on

- 6) Press the SET key to turn ON the adjustment mode. When you press the SET key, the gain adjustment of AGC will start automatically. See the section 4-5. Servo Block Adjustment for adjustment methods.

Note : When you set the adjustment mode to ON, the ALARM indicator on the front panel will flash.

Setting the adjustment mode OFF

- 7) Hold down the DATA key and turn the SEARCH dial until the following message appears. Then, press the SET key.

FL tube display message : AGc Adj * * * * oFF

↑
Data stored in the backup memory.

After the adjustment, the adjusted data will be stored in the backup memory when you set the adjustment mode to OFF. The stored data will be displayed in the Work Area of the FL tube display.

Data (Work Area of the FL tube display) :

* * * * oFF
↑
Data stored in the backup memory.

(36) tEst SiG (Test Signal)

Selects the test signal to be recorded. The selected signals will be recorded using the REC and PLAY keys.

Specification conditions :

- Insert a cassette (the cassette with the tab hole open).
- Exclude software tapes.
- STOP mode.
- Set the test menu "rAtE SEL" to the "Auto".

Specification method :

Hold down the DATA key and turn the SEARCH dial. Then, press the SET key to set the test signal.

- 1) Enter (OPEN) the SERVICE MENU.
- 2) Enter (OPEN) the TEST MENU ([tEst]).
- 3) Enter (OPEN) the [trnSP] MENU.
FL tube display message : [trnSP] oPEn
- 4) Hold down the MENU key and turn the SEARCH dial until the following message appears.

FL tube display message : tEst SiG oFF

- 5) Hold down the DATA key and turn the SEARCH dial until the required test signal appears in the Work Area of the FL tube display. Then, press the SET key.

When you press the SET key, the Work Area message will light without flashing.

Work Area Display	Signal to be recorded
1) OFF	—
2) A-A 157	Leading head A ch 1.57M
3) A-b 157	Leading head B ch 1.57M
4) d-A 157	Trailing head A ch 1.57M
5) d-b 157	Trailing head B ch 1.57M
6) A-47 157	Leading head A ch 4.7M B ch 1.57M
7) A- 157 47	Leading head A ch 1.57M B ch 4.7M
8) d-47 157	Trailing head A ch 4.7M B ch 1.57M
9) d- 157 47	Trailing head A ch 1.57M B ch 4.7M
10) A- 13 157	Leading head A ch 130K B ch 1.57M
11) A- 157 13	Leading head A ch 1.57M B ch 130K
12) d- 13 157	Trailing head A ch 130K B ch 1.57M
13) d- 157 13	Trailing head A ch 1.57M B ch 130K
14) A-tSt in	Leading head TEST INPUT
15) d-tSt in	Trailing head TEST INPUT
16) A- inPut	Leading head NORMAL INPUT
17) d- inPut	Trailing head NORMAL INPUT

Note : If you do not set the [tEST SiG] mode to OFF (Step 4), the ALARM indicator on the front panel will flash.

(37) rAtE SEL (Error Rate Select)

Same as the "rAtE SEL" menu item in the DISPLAY MENU.

(38) Err rAtE (Error Rate)

Same as the "Err rAtE" menu item in the DISPLAY MENU.

(39) [iS-Ed] (Instant-Edit)

Enters/exits (OPEN/CLOSE) the test menus of the MEMORY START memory and EDIT MEMORY option board.

Specification conditions : Option board must be installed.

Specification method :

Hold down the DATA key and turn the SEARCH dial. Then, press the SET key to OPEN/CLOSE the mode.

- 1) Enter (OPEN) the SERVICE MENU.

- 2) Enter (OPEN) the TEST MENU ([tEST]).

FL tube display message : [tEST] oPeN

Starting (OPEN) the [iS-Ed] mode

- 3) Hold down the MENU key and turn the SEARCH dial until the following message appears.

FL tube display message : [iS-Ed] cLoSE

- 4) Hold down the DATA key and turn the SEARCH dial until the following message appears. Then, press the SET key.

FL tube display message : [iS-Ed] oPeN
(flashing → ON)

- 5) After the mode is OPEN, hold down the MENU key and turn the SEARCH dial to select either (33) "inStAnt" or (34) "Edit" menu.

Ending (CLOSE) the [iS-Ed] mode

- 6) Hold down the DATA key and turn the SEARCH dial until the following message appears. Then, press the SET key.

FL tube display message : [iS-Ed] cLoSE

The TEST MENU items ((33) and (34)) are listed below. After you start the [iS-Ed] MENU (OPEN), hold down the MENU key and turn the SEARCH dial to select the required TEST MENU item. (Turn the dial until the required item appears on the FL tube display.)

(40) [inStAnt] (Instant Test)

Tests the memory used for MEMORY START.

Specification conditions : STOP mode

Specification method :

Start/cancel the test using the SET, DATA, and RESET keys.

1) Enter (OPEN) the SERVICE MENU.

2) Enter (OPEN) the TEST MENU ([tEST]).

3) Enter (OPEN) the [iS-Ed] MENU.

FL tube display message : [iS-Ed] oPEn

4) Hold down the MENU key and turn the SEARCH dial until the following message appears.

FL tube display message : inStAnt tEst

(rapid flashing)

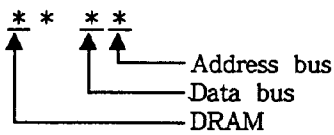
Starting the test

5) Press the SET key.

The Work Area message "tEst" will flash at a slower speed than before, indicating the start of the test.

6) After the test ends, the results will be displayed in the Work Area of the FL tube display.

Results (Work Area of the FL tube display) :

Result	Work Area Display
No error	no Error
Error	 The item corresponding to the bit containing a "1" is defective.

Caution : When you perform this test, the audio data stored in the memory will be lost.

Canceling the test

7) Press the DATA and RESET keys simultaneously.

2-9. Tools and Instruments

Item	Part No.	Remarks
Adjustment mirror	J-6080-029-A	For tape pass adjustment
Spare mirror	J-6080-030-1	For tape pass adjustment
Thickness gauge	9-911-053-00	For spacing check
Cassette weight	J-6224-140-A	For tape pass adjustment
Cleaning cassette DT-10CL	—	For head cleaning (Sony product)
Adjustment driver	J-6225-100-A	For tape pass adjustment
Test tape TY-7111D	8-909-820-00	For playback level check
Test tape TY-7251	8-909-813-00	For tracking adjustment
Test tape TY-7212	8-960-081-01	For error rate check
Blank tape TY-30B	8-892-358-00	For recording level adjustment
Torque meter TW-7131	8-909-708-71	For FWD and REV torque adjustment
Torque meter TW-7231	8-909-708-72	For FF and REW torque check
Molycote grease EM-30L	4-918-645-01	For cassette Up compartment
EX-264 extension board	J-6226-090-A	For DIO-10 and MEM-40 boards check
EX-265 extension board	J-6226-100-A	For DIO-10 and MEM-40 boards check
Cleaning fluid	9-919-573-00	For cleaning
Cleaning piece (chamois)	2-034-697-00	For cleaning
PD-817 RF LEVEL CHECKER	J-6228-170-A	For Recording/Playback Block Adjustment

SECTION 3

Periodical Inspection and Maintenance

3-1. Cleaning

After cleaning, thoroughly wipe the drum surface using a dry cloth before inserting a cassette. If you do not wipe the drum surface completely with a dry cloth, the tape may be damaged due to an effect similar to moisture condensation.

1) Normal cleaning

Clean the drum and tape passing system once a week using the following cleaning cassette.

Note: Run the cleaning cassette for no more than 30 seconds.

2) When dirt is not removed completely with the cleaning cassette (perform this cleaning once a month)

Cleaning the drum

- (1) Wipe the lower section of the drum along the lead using a cleaning piece moistened with alcohol. Never touch the side surface of a drum with your bare hands.
- (2) Use a dry cleaning piece and wipe the section you just wiped in the previous step. Be sure to perform step (2) immediately after (1). After the alcohol dries up, removing the remaining dirt just by wiping with a dry cloth will be difficult.
- (3) Clean the upper section of the drum using a cleaning piece moistened with alcohol. Never touch the side surface of upper drum with

your hands. Rotate the drum in the direction of the arrow (⇒) to wipe the side surfaces of the upper drum and head. Repeat this procedure for approximately three rotations of the upper drum.

- (4) Wipe the upper section of the drum using a dry cleaning piece along the lead and rotate the upper drum approximately twice to wipe with a dry cleaning piece.

Be sure to perform step (4) immediately after (3). After the alcohol dries up, removing the remaining dirt just by wiping with a dry cloth will be difficult.

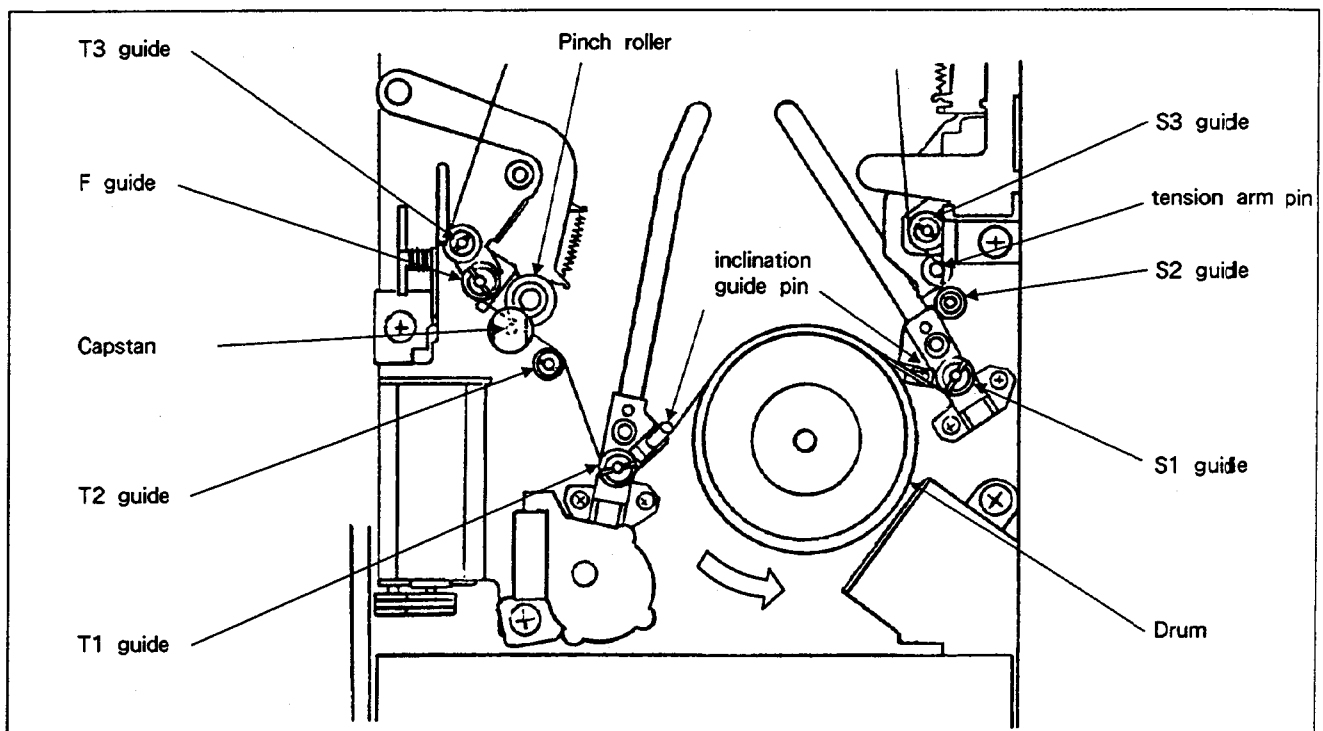
- (5) Inspect the entire circumference of upper drum by sight to make sure no fingerprints and no stains remain when the alcohol dries up.

Notes:

1. Never clean the drum while it is being driven.
2. Do not wipe with the cleaning piece in a vertical motion with respect to the head chip. Doing so will most likely damage the head chip.

Cleaning the tape running system

- (1) Remove the dirt on the capstan axis, pinch roller, tension arm pin, and inclination guide pin using a cleaning piece moistened with alcohol. Wipe these parts then with a dry cleaning piece.
- (2) Peel off the dirt on the rotation rollers (T1, T2, T3, S1, S2, S3, and F guides) using a stick made of pliant piece such as bamboo before too much dirt accumulates. Then, wipe these areas with a dry cleaning piece.



3-2. Periodical Inspection and Maintenance Procedures

To maintain proper performance, replace worn parts, clean the mechanical parts, inspect the mechanical and electrical systems, and make necessary adjustments. As a guideline, refer to the hour meter (Hour-t (HOUR-TIME)) reading in the display menu to determine the inspection and maintenance intervals. The table below shows the maintenance and inspection guidelines corresponding to the hour meter readings. A list of replacement parts is also shown. The part replacement intervals are based on the part's service life recorded in the past. These intervals may be changed in the future.

Regular inspection and maintenance schedule

Part Name (Part No.)	Head Hour Meter (h)						Remarks
	1Week	500H	1500H	3000H	4500H	6000H	
DATM assembly DATM-06R (A-7806-080-A)						☆	Replace every 6000 H.
Drum assembly DOM-14AR (8-848-548-11)	○		☆	☆	☆	(☆)	Clean once week and replace every 1500 H.
Capstan DC motor BHF-2803A (8-835-206-01)	○			☆		(☆)	Clean every week and replace every 3000 H.
Reel, U-2A DC motor (8-835-205-01)				☆		(☆)	Replace every 3000 H.
Pinch roller assembly (A-7810-488-A)	○		☆	☆	☆	(☆)	Clean once week and replace every 1500 H.
Rotary encoder (1-464-724-11)			☆	☆	☆	(☆)	Replace every 1500 H.
Cassette compartment assembly (A-7810-496-A)						☆	Replace every 6000 H.
Lithium Battly CR-2450 (1-528-229-11)			☆	☆	☆	☆	Replace when the drum assembly is replaced.

○ : Clean. ☆ : Replace. (☆) : This part is in the DATM assembly. Therefore it will be replaced at the same time when the DATM assembly is replaced.

3-3. Post-Repair Maintenance

After repairing a unit, do the following regardless of the unit's length of service.

1. Clean the drum head.
2. Clean the tape transport surfaces.

SECTION 4

MECHANICAL ADJUSTMENT, TAPE PATH ADJUSTMENT, SERVO BLOCK ADJUSTMENT, RECORDING/PLAYBACK BLOCK ADJUSTMENT, AND ERROR RATE CHECK

This section provides information on the adjustments and checks required when you replace the following main parts of the mechanical deck.

1. Mechanical deck assembly
2. Drum assembly
3. Capstan motor
4. Reel motor
5. Pinch roller assembly
6. Rotary encoder
7. Cassette compartment assembly

The following adjustment and check items are explained here. Perform each adjustment and check using the corresponding TEST MENU item (see list below) in the SERVICE MENU.

See "2-8. Service Menu" of Section 2 for details on the TEST MENU.

Adjustment Item		TEST MENU Item (FL display)	
4-2. Mechanical Device Test (operation check)		tranSP-1	tEST (trAnSP-1 tEST)
4-3. Mechanical Adjustment	4-3-1. Rotary encoder position adjustment	—	
	4-3-2. End sensor operation check	torq Adj	oFF (torq Adj oFF)
	4-3-3. FF/REW torque adjustment	torq Adj	on (torq Adj on)
	4-3-4. FWD torque adjustment	torq Adj	on (torq Adj on)
	4-3-5. REV torque adjustment	torq Adj	on (torq Adj on)
	4-3-6. FWD back tension adjustment	torq Adj	on (torq Adj on)
	4-3-7. EJECT torque adjustment	torq Adj	on (torq Adj on)
	4-3-8. FF/REW time check	torq Adj	oFF (torq Adj oFF)
4-4. Tape Path Adjustment	4-4-1. Tape running check (1)	PAth Adj	oFF (PAth Adj oFF)
	4-4-2. Tape running check (2)	PAth Adj	oFF (PAth Adj oFF)
	4-4-3. Tape path fine adjustment	PAth Adj	on (PAth Adj on)
	4-4-4. RF raise up time check	PAth Adj	on (PAth Adj on)
	4-4-5. Lack of RF waveform check in FF/REW	PAth Adj	oFF (PAth Adj oFF)
	4-4-6. Overall tape path check	PAth Adj	oFF (PAth Adj oFF)
4-5. Servo Block Adjustment	4-5-1. SWP position adjustment	PAth Adj on and DPG Adj on	(PAth Adj on) (dPG Adj on)
	4-5-2. ATF playback AGC adjustment	AGc Adj	on (AGc Adj on)
4-6. Recording /Playback Block Adjustment	4-6-1. Adjustment using the RF level checker PD-817	tEST SiG A-tst in	(tEST SiG A-tst in)
		tEST SiG d-tst in	(tEST SiG d-tst in)
	4-6-2. Adjustment using a spectrum analyzer	tEST SiG A-157-13	(tEST SiG A-157-13)
		tEST SiG A-13-157	(tEST SiG A-13-157)
4-7. EQ-H Preset and Error Rate Check	4-7-1. EQ-H preset	—	
	4-7-2. Error rate check	rAtE SEL A-Ab	(rAtE SEL A-Ab)
		rAtE SEL nor	(rAtE SEL d-Ab)
		and Err rAtE	(Err rAtE)
4-8. Cassette Compartment Operation Check		—	

Adjustment Procedure after Replacing the Main Parts

Use the following procedure to make adjustments after you replace the main parts.

Parts Replaced	Adjustment Procedure
Mechanical Deck Assembly (DATM-06R)	4-3-2. End sensor operation check → 4-3-3. FF/REW torque check → 4-3-4. FWD torque adjustment → 4-3-5. REV torque adjustment → 4-3-6. FWD back tension adjustment → 4-3-7. EJECT torque check → 4-4-1. Tape running check (1) → 4-4-2. Tape running check (2) → (cassette compartment assembly mounting) → 4-2. Mechanism device test → 4-3-8. FF/REW time check → 4-4-3. Tape path fine adjustment → 4-4-4. RF raise up time check → 4-4-5. Lack of RF waveform check in FF/REW → 4-4-6. Overall tape path check → 4-5-1. SWP position adjustment → 4-5-2. ATF playback AGC adjustment → 4-6. Recording/playback adjustment (recording current level adjustment) → 5-2. Signal processing adjustment (RF PLL adjustment) → 4-7-2. Error rate check
Drum Assembly (DDH-14AR)	4-3-4. FWD torque adjustment → 4-3-5. REV torque adjustment → 4-3-6. FWD back tension adjustment → 4-4-1. Tape running check (1) → 4-4-2. Tape running check (2) → (cassette compartment assembly mounting) → 4-2. Mechanism device test → 4-4-3. Tape path fine adjustment → 4-4-4. RF raise up time check → 4-4-5. Lack of RF waveform check in FF/REW → 4-4-6. Overall tape path check → 4-5-1. SWP position adjustment → 4-5-2. ATF playback AGC adjustment → 4-6. Recording/playback adjustment (recording current level adjustment) → 5-2. Signal processing adjustment (RF PLL adjustment) → 4-7-2. Error rate check
Capstan Motor (BHF2803A)	4-4-1. Tape running check (1) → 4-4-2. Tape running check (2) → (cassette compartment assembly mounting) → 4-2. Mechanism device test → 4-4-3. Tape path fine adjustment → 4-4-4. RF raise up time check → 4-4-5. Lack of RF waveform check in FF/REW → 4-4-6. Overall tape path check

Parts Replaced	Adjustment Procedure
Reel Motor (U-2A)	4-3-3. FF/REW torque check → 4-3-4. FWD torque adjustment → 4-3-5. REV torque adjustment → 4-3-6. FWD back tension adjustment → 4-3-7. EJECT torque check → 4-4-1. Tape running check (1) → 4-4-2. Tape running check (2) → (cassette compartment assembly mounting) → 4-2. Mechanism device test → 4-3-8. FF/REW time check → 4-4-3. Tape path fine adjustment → 4-4-4. RF raise up time check → 4-4-5. Lack of RF waveform check in FF/REW → 4-4-6. Overall tape path check
Pinch Roller Assembly	4-4-1. Tape running check (1) → 4-4-2. Tape running check (2) → (cassette compartment assembly mounting) → 4-2. Mechanism device test → 4-4-3. Tape path fine adjustment → 4-4-4. RF raise up time check → 4-4-5. Lack of RF waveform check in FF/REW → 4-4-6. Overall tape path check → 4-5-1. SWP position adjustment
Rotary Encoder	4-3-1. Rotary encoder position adjustment → 4-4-3. Tape path fine adjustment → 4-4-4. RF raise up time check → 4-2. Mechanism device test
Cassette Compartment Assembly	4-2. Mechanism device test → 4-8. Cassette compartment operation check → 4-3-8. FF/REW time check

The following table lists the items that must be adjusted when you replace the main parts. An item indicated with a circle requires adjustment.

Adjustment Item \ Main Replacement Parts	Mechanical Deck	Drum Assembly	Capstan Motor	Reel Motor	Pinch Roller Assembly	Rotary Encoder	Cassette Compartment
4-2. Mechanical Device Test	○	○	○	○	○	○	○
4-3-1. Rotary encoder position adjustment						○	
4-3-2. End sensor operation check	○						
4-3-3. FF/REW torque adjustment	○			○			
4-3-4. FWD torque adjustment	○	○		○			
4-3-5. REV torque adjustment	○	○		○			
4-3-6. FWD back tension adjustment	○	○		○			
4-3-7. EJECT torque adjustment	○			○			
4-3-8. FF/REW time check	○			○			○
4-4-1. Tape running check (1)	○	○	○	○	○		
4-4-2. Tape running check (2)	○	○	○	○	○		
4-4-3. Tape path fine adjustment	○	○	○	○	○		
4-4-4. RF raise up time check	○	○	○	○	○		
4-4-5. Lack of RF waveform check in FF/REW	○	○	○	○	○		
4-4-6. Overall tape path check	○	○	○	○	○		
4-5-1. SWP position adjustment	○	○					
4-5-2. ATF playback AGC adjustment	○	○					
4-6. Recording/Playback Block Adjustment	○	○					
4-7-2. Error Rate Check	○	○					
4-8. Cassette Compartment Operation Check							○
5-2. Signal processing adjustment (RF PLL adjustment)	○	○					

4-1. Preparation

Equipment Required

Item	Minimum Specifications	Model
Spectrum analyzer	• frequency range : - 10 MHz and above • frequency span : zero span measurement is possible • sweep time : 100 msec and below is possible • averaging, exterior trigger is possible	advanced R3261A or equivalent
Oscilloscope	• frequency range : DC - 100 MHz and above • accuracy : 5mV • occurrence : 2 occurrences or more	TEKTRONIX 2445A or equivalent
Audio frequency oscillator	• oscillating frequencies : 20 Hz - 100 kHz • output level : - + 4 dBm and above	—

Tools Required

Item	Part No.	Remarks
Cassette compartment dummy connector	—	Make a cassette compartment dummy connector using a small harness (ccp). See "3) Operation Without the Cassette Compartment" on page 2-16 for the procedure to make a dummy connector.
Cassette weight	J-6224-140-A	Used for making adjustments (checks) while the cassette compartment is removed.
Screwdriver for adjusting	J-6225-100-A	Used for the tape path fine adjustment.
RF LEVEL CHECKER PD-817	J-6228-170-A	For Recording/Playback Block

Test Tape and Torque Meter

Item	Part No.	Remarks
Test tape TY-7111D	8-909-820-00	Used for the playback level check.
Test tape TY-7251	8-909-813-00	Used for the tracking adjustment.
Test tape TY-30B	8-892-358-00	Used for the recording level adjustment.
Test tape TY-7212	8-960-081-01	Used for the error rate check.
Torque cassette TW-7131	8-909-708-71	Used for the FWD/REV torque adjustment.
Torque cassette TW-7231	8-909-708-72	Used for the FF/REW torque check.
Cassette tape for testing the operations	—	Any 120-minute tape sold in the market

4-2. Mechanical Device Test (operation check)

Perform the Mechanical Device Test when you replace major parts including the mechanical deck assembly, drum assembly, capstan motor, reel motor, pinch roller assembly, cassette compartment, DR-139 board and SV-123 board.

Equipment and Tools Required

Cassette tape for testing the operations

Procedure

- (1) Enter (OPEN) the [trnSP] test menu in the SERVICE MENU and select the following test item. Then, press SET.

FL tube display message : trnSP-1 tES
(rapid flashing→slow flashing)

- (2) Load a cassette tape (any tape sold in the market) to test the operations. The test will automatically start checking the operations of the cassette compartment, loading motor, drum motor, reel motor, and capstan motor. (The test cassette tape will be automatically ejected.)

- (3) After the operations have been tested, make sure the FL tube display indicates the following message.

FL tube display message : trnSP-1 no Error

Notes :

You must perform the above operation tests with the cassette compartment mounted in the mechanical deck (normal operating condition). See "2-8. Service Menu" in Section 2 for the TEST MENU specification procedure.

4-3. Mechanical Adjustment

Each mechanical adjustment and check item must be performed while the cassette compartment is removed from the mechanical deck. (See "2-1. Removal of Boards and Major Mechanical Parts" on page 2-7 for the cassette compartment removal procedure.) The test cassette tape and torque meter will be used after they are mounted in the cassette weight. (See "3) Operation Without the Cassette Compartment" on page 2-18 for information on using the cassette weight.)

Equipment and Tools Required

Oscilloscope

TW-7131 Torque cassette (8-909-708-71)

Cassette tape (any 120-minute cassette tape sold in the market) for testing the operations

Cassette weight (J-6224-140-A)

Cassette compartment dummy connector *

* Make a cassette compartment dummy connector using a small harness (ccp). See "3) Operation Without the Cassette Compartment" on page 2-16 for the procedure to make a dummy connector.

Preparations

Insert the cassette compartment dummy connector in the CN106 connector on the DR-139 board.

4-3-1. Rotary encoder position adjustment

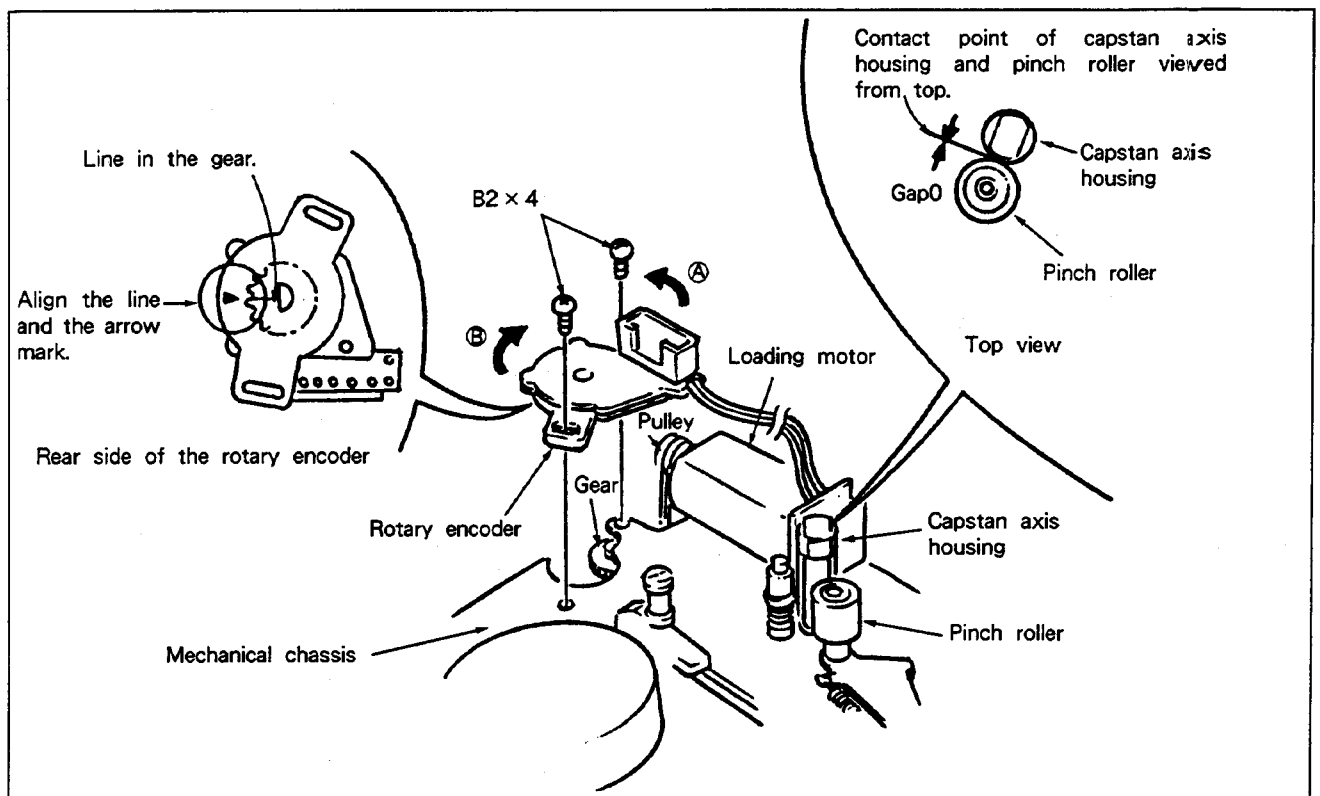
Adjust the rotary encoder position when you replace the rotary encoder.

Procedure

- (1) Switch off the POWER of the unit.
- (2) Remove the rotary encoder.
(Remove the rotary encoder mounting screws before disconnecting its connector.)
- (3) Turn the loading motor pulley and move the pinch roller so that the roller comes in contact with the capstan axis housing as shown in the figure below.
- (4) Align the arrow mark and the line in the gear of the rotary encoder (rear side) as shown in the figure below.
- (5) Use two screws (+ B2x4) to mount the rotary encoder lightly on the mechanical chassis so that the gear of the rotary encoder properly engages the gear of the mechanical chassis. (Lightly tighten the screws at the center of the long holes of rotary encoder.)
- (6) Switch on the POWER. Hold down cassette sensor switch and press PLAY to set the playback mode temporarily. Then, press STOP to set the mechanical deck to STOP mode. During the STOP mode, check the following items ((1),(2), and (3)). Adjust the rotary encoder mounting position as shown in the figure below to comply with the specifications. Make adjustments while POWER is switched off and check the position when POWER is on.

Specifications :

- ① The tension regulator release pin shall be set at the OFF position of the tension regulator.
- ② The gap between the capstan axis and the pinch roller shall be 1.5mm to 2.5mm.
- ③ The F guide must be in contact with the groove of the square hole of the mechanical chassis.



Adjustment location :

Move the mounting position of the rotary encoder.

Adjustment direction	Distance to pinch roller
Direction A	Closer
Direction B	Wider

- (7) Set the mechanical deck (guide) to FWD mode. Make sure the rotary encoder position complies with the following specifications in this condition.

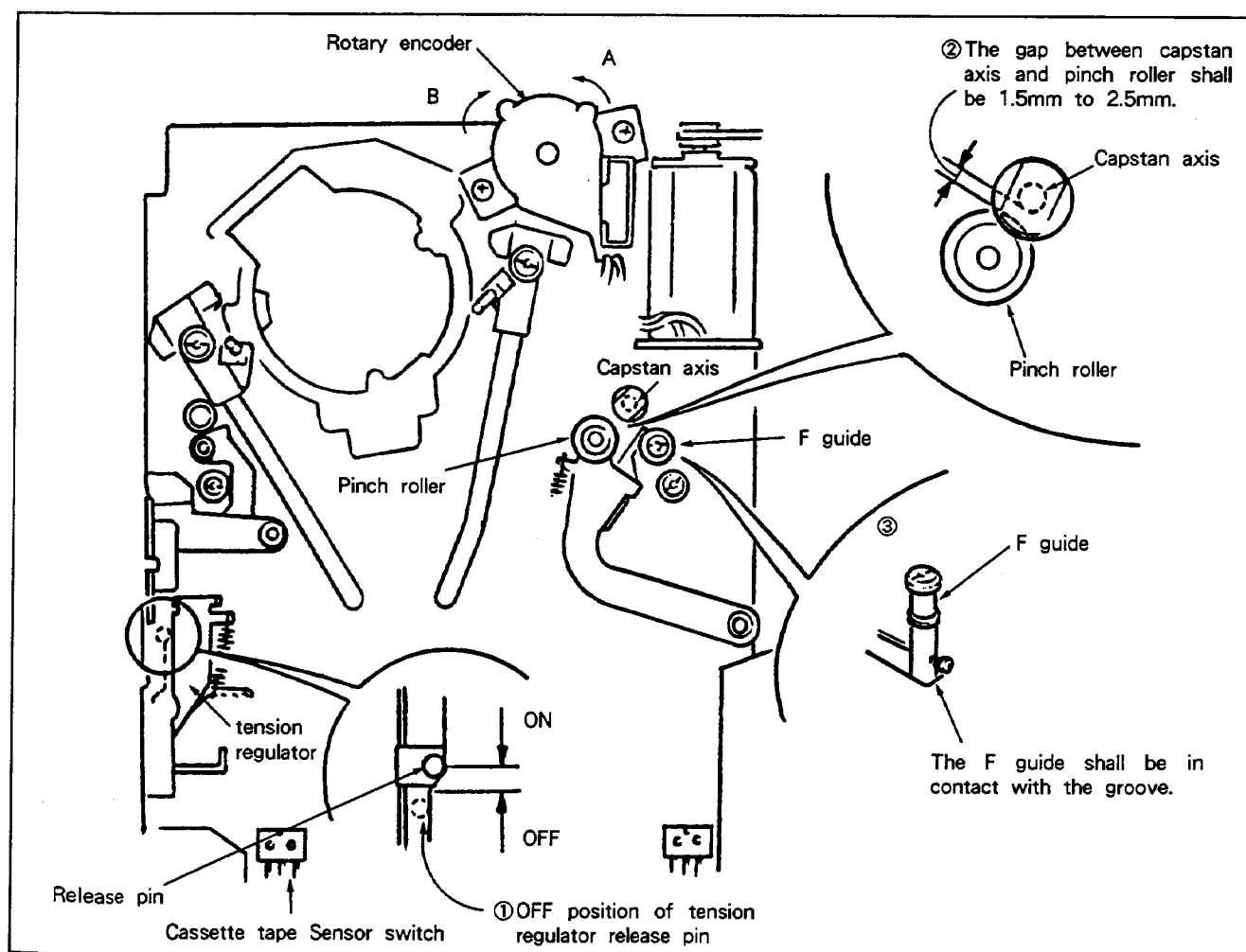
Specifications :

- ① Tension regulator release pin shall be at the ON position of the tension regulator.
- ② The pinch roller shall be in contact with the capstan axis.

- (8) Set the mechanical deck (guide) to STOP mode again. In this condition, make sure the rotary encoder position complies with the specifications indicated in step (6).

- (9) This time, firmly tighten two screws (+ B2x4) which mount the rotary encoder on the mechanical chassis.

If the rotary encoder position does not comply with the specifications of steps (6) and (7), retry the procedure from step (1).



4-3-2. End sensor (S side, T side) operation check

Check the operation of the end sensor when you replace the mechanical deck.

Equipment and Tools Required

Oscilloscope

CH1 : DC 500mV/DIV

CH2 : DC 500mV/DIV

500u sec/DIV

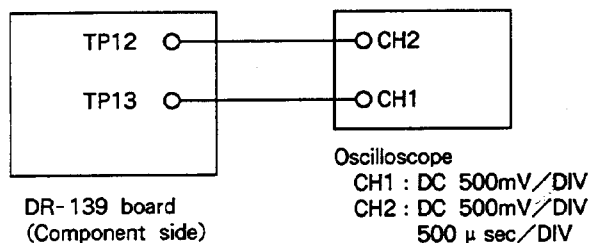
Note : When the DC measurement causes a scale overflow, measure in AC mode.

TY-30B Test tape (8-892-358-00)

Cassette compartment dummy connector

Cassette weight (J-6224-140-A)

Connections

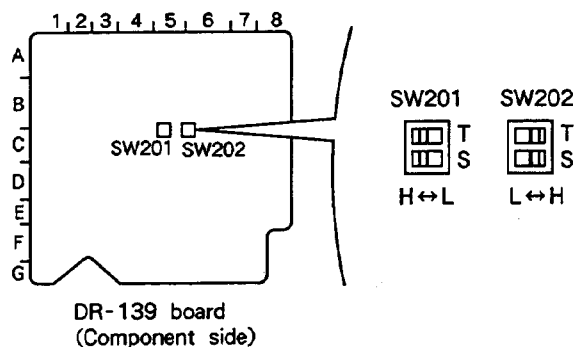


Switch settings

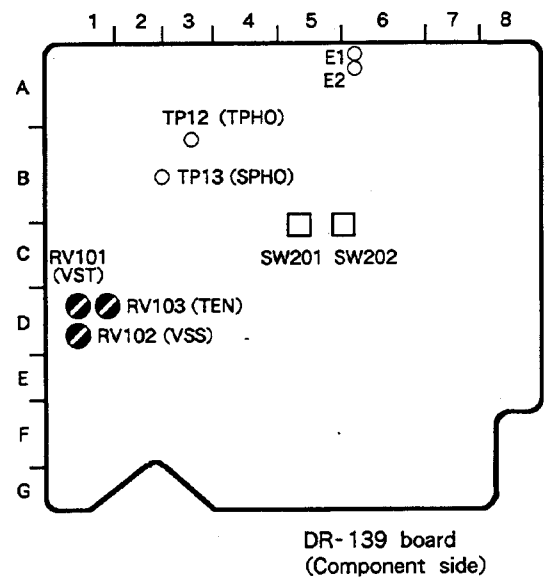
DR-139 board

SW201 (C,5) : H (Both switches S and T) See figure below.

SW202 (C,5) : H (Both switches S and T) See figure below.



Measurement Location



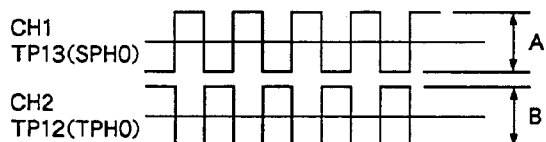
Procedure

- Enter (OPEN) the TEST MENU [trnSP] in the SERVICE MENU and make the following selection.
FL tube display : torq Adj OFF
Note : When ON is set from the POWER switch OFF status, this mode is automatically selected.
- Connect the oscilloscope to the following connectors of the DP-139 board.
CH1 : TP13 (SPHO) • E1 (GND), DR-139 board
CH2 : TP12 (TPHO) • E2 (GND), DR-139 board
- Attach the TY-30B test tape to the cassette weight and mount it on the mechanical deck.
Note : Since the loading operation will start almost immediately after you mount the cassette weight on the mechanical deck, be sure to mount it quickly.
- Press REW and rewind the tape to its beginning to make sure the output level of the TP12 (TPHO) at the reader tape section complies with the following specifications. (Check operation of the T side end sensor.)
- Press FF and feed the tape to the is end to make sure the output level of the TP13 (SPHO) at the reader section complies with the following specifications. (Check operation of the S side end sensor.)

Note : When you check the operation of the T side end sensor, the tape will be rewound automatically a little at the tape beginning and the FF/REW operations will be repeated.

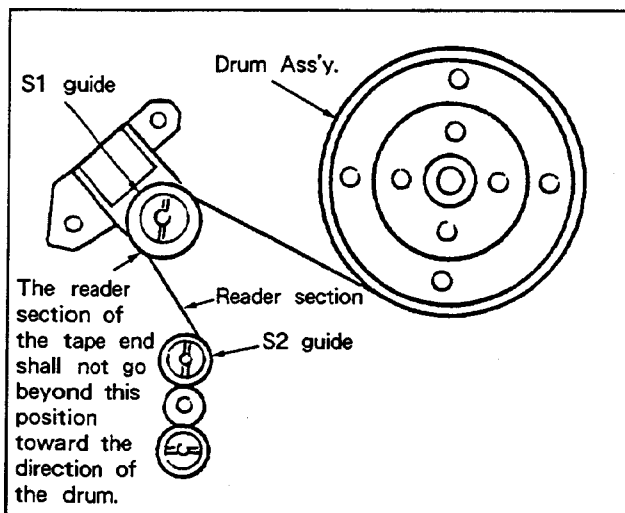
Specifications : S side output level (A) 800mVp-p

T side output level (B) 800mVp-p

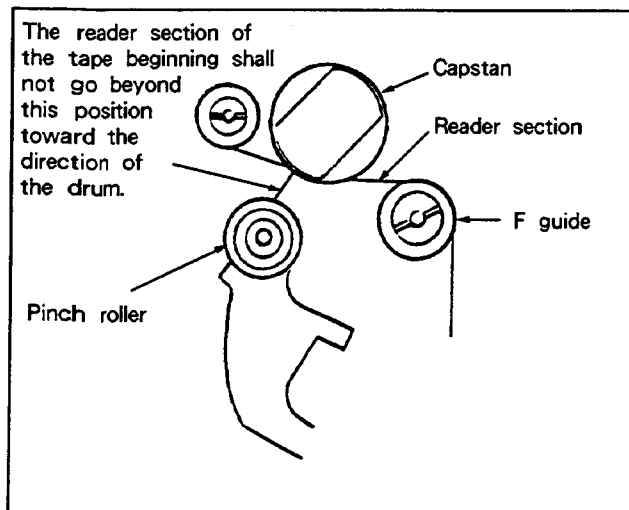


- (6) Perform FF and REW operations and make sure the beginning and end of a tape stop at the following positions.

Tape end position check (FF operation)



Tape start position check (REW operation)



- (7) Press EJECT. After a tape is wound, remove the cassette tape from the mechanical deck.

4-3-3. FF/REW torque check

Check the FF/REW torque operations when you replace the reel motor, and DR-139 board. Be sure to perform the following adjustments after you check the FF/REW torque operations.

4-3-4. FWD torque adjustment

4-3-5. REV torque adjustment

4-3-6. FWD back tension adjustment

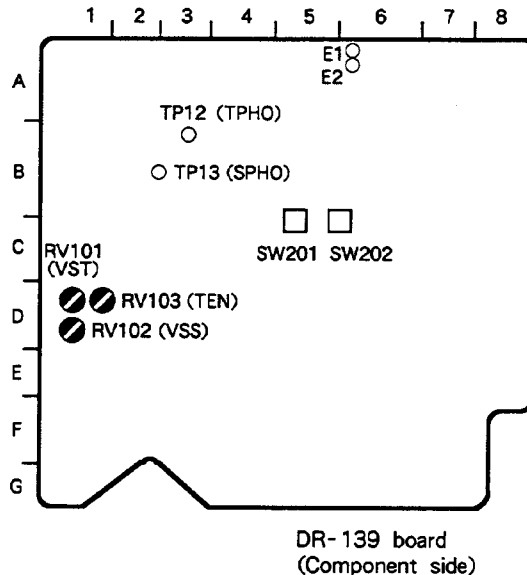
Equipment and Tools Required

TW-7231 Torque cassette (8-909-708-72)

Cassette weight (J-6224-140-A)

Cassette compartment dummy connector

Adjustment Locations



Procedure

- (1) Enter (OPEN) the TEST MENU [trnSP] in the SERVICE MENU and make the following selection.

FL tube display message : torq Adj on

(At this time, the ALARM indicator on the front panel will flash.)

- (2) Attach the TW-7231 torque cassette to the cassette weight and mount it on the mechanical deck.

Note: Since the loading operation will start almost immediately after you mount the cassette weight on the mechanical deck, mount it quickly.

- (3) Turn ●RV101 (VST) and ●RV102 (VSS) fully clockwise.
- (4) Press FF to select the FF mode.
- (5) When the FF mode stabilizes, make sure the maximum torque value of the TW-7231 torque cassette (take-up reel side) complies with the following specifications.

Specifications:

Maximum FF torque 25 to 40g·cm

- (6) Press STOP.
- (7) Press REW to select the REW mode.
- (8) When the REW mode stabilizes, make sure the maximum torque value of the TW-7231 torque cassette (supply reel side) complies with the following specifications.

Specifications:

Maximum REW torque 25 to 40g·cm

- (9) Set ●RV101 (VST) and ●RV102 (VSS) of the DR-139 board at the detent position (the midpoint of a full rotation).

4-3-4. FWD torque adjustment (DR-139 board adjustment)

Perform this adjustment when you replace the mechanical deck assembly, drum assembly, reel motor, and DR-139 board.

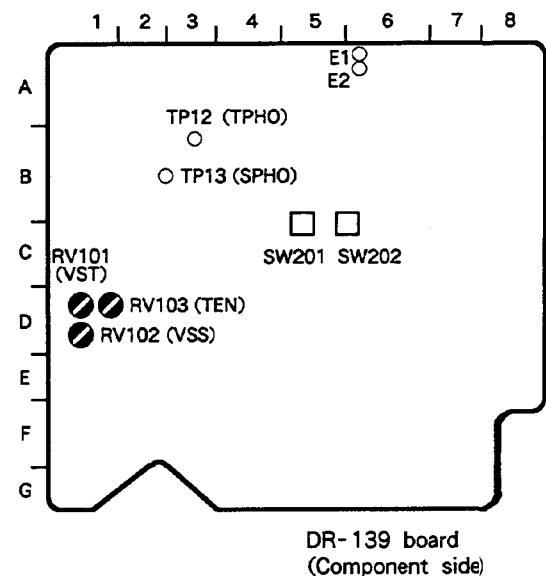
Equipment and Tools Required

TW-7131 Torque cassette (8-909-708-71)

Cassette weight (J-6224-140-A)

Cassette compartment dummy connector

Adjustment Locations



Procedure

- (1) Enter (OPEN) the TEST MENU [trn\$P] in the SERVICE MENU and make the following selection.

FL tube display message: torq Adj on

(At this time, the ALARM indicator on the front panel will flash.)

- (2) Attach the TW-7131 torque cassette to the cassette weight and mount it on the mechanical deck.

Note: Since the loading operation will start almost immediately after you mount the cassette weight on the mechanical deck, mount it quickly.

- (3) Press PLAY to start the playback mode.

- (4) Adjust ●RV101 (VST) of the DR-139 board so that the torque value of the TW-7131 torque cassette (take-up reel side) complies with the following specifications. Make the adjustment in accordance with the structure of the S2 guide.

Specifications :

S2 guide structure	FWD torque (g · cm)
Fixed guide	12 to 14
Roller guide	8 to 10

Note : When the meter indication fluctuates, make adjustments so that the center of this fluctuation complies with the specifications.

Adjustment Location :

●RV101 (VST), DR-139 board

- (5) Press EJECT. After the tape is wound, remove the TW-7131 torque cassette from the mechanical deck.

4-3-5. REV torque adjustment

Perform this adjustment when you replace the mechanical deck assembly, drum assembly, and reel motor, and DR-139 board.

Equipment and Tools Required

TW-7131 Torque cassette (8-909-708-71)

Cassette weight (J-6224-140-A)

Cassette compartment dummy connector

Adjustment Location

See "Adjustment Locations" in 4-3-4. FWD torque adjustment.

Procedure

- (1) Enter (OPEN) the TEST MENU [trnSP] in the SERVICE MENU and make the following selection.

FL tube display message : torq Adj on
(At this time, the ALARM indicator on the front panel will flash.)

- (2) Attach the TW-7131 torque cassette to the cassette weight and mount it on the mechanical deck.

Note : Since the loading operation will start almost immediately after you mount the cassette weight on the mechanical deck, mount it quickly.

- (3) Press CUE to start the REVx (-1) mode of the CUE mode (turn the SEARCH dial counter clockwise until "-1" appears on the FL tube display).

- (4) Adjust ●RV102 of the DR-139 board so that the torque value of the TW-7131 torque cassette (supply reel side) complies with the following specifications.

Specifications : REV torque $14 \pm \frac{1}{2}$ g · cm

Adjustment Location : ●RV102, DR-138 board

- (5) Press EJECT. After the tape is wound, remove the TW-7131 torque cassette from the mechanical deck.

4-3-6. FWD back tension adjustment

Perform this adjustment when you replace the mechanical deck assembly, drum assembly, reel motor, and DR-139 board.

Equipment and Tools Required

TW-7131 Torque cassette (8-909-708-71)

Cassette weight (J-6224-140-A)

Cassette compartment dummy connector

Adjustment Location

See "Adjustment Locations" in section 4-3-4. FWD torque adjustment.

Procedure

- (1) Enter (OPEN) the TEST MENU [trnSP] in the SERVICE MENU and make the following selection.

FL tube display message : torq Adj on

(At this time, the ALARM indicator on the front panel will flash.)

- (2) Attach the TW-7131 torque cassette to the cassette weight and mount it on the mechanical deck.

Note : Since the loading operation will start almost immediately after you mount the cassette weight on the mechanical deck, mount it quickly.

- (3) Press PLAY to start the playback mode.
- (4) Adjust ●RV103 (TEN) of the DR-139 board so that the torque value of the TW-7131 torque cassette (supply reel side) complies with the following specifications. Make the adjustment in accordance with the structure of the S2 guide.

Specifications :

S2 guide structure	FWD back tension (g · cm)
Fixed guide	4.5 ± 0.5
Roller guide	5.5 ± 0.5

Adjustment Location : ●RV103, DR-139 board

- (5) Press EJECT. After the tape is wound, remove the TW-7131 torque cassette from the mechanical deck.

4-3-7. EJECT torque check

Check the EJECT torque when you replace the reel motor, and DR-139 board.

Equipment and Tools Required

TW-7131 Torque cassette (8-909-708-71)

Cassette weight (J-6224-140-A)

Cassette compartment dummy connector

Procedure

- (1) Enter (OPEN) the TEST MENU [trnSP] in the SERVICE MENU and make the following selection.

FL tube display message : torq Adj on

(At this time, the ALARM indicator on the front panel will flash.)

- (2) Attach the TW-7131 torque cassette to the cassette weight and mount it on the mechanical deck.

Note : Since the loading operation will start almost immediately after you mount the cassette weight on the mechanical deck, mount it quickly.

- (3) Press PLAY to start the playback mode.
- (4) Press EJECT and make sure the torque value of the TW-7131 torque cassette (both supply and take-up reel sides) complies with the following specifications during the unthreading (unloading) operation.

Specifications : EJECT torque 5 to 10g · cm

- (5) Set the torq Adj test menu to OFF (the following message should appear).

FL tube display message : torq Adj oFF

4-3-8. FF/REW time check

Check the FF/REW time when you replace the mechanical deck assembly, drum assembly, and reel motor.

Equipment and Tools Required

Cassette tape (any 120-minute tape sold in the market) for checking the operation

Cassette weight (J-6224-140-A)

Cassette compartment dummy connector

Procedure

- (1) Enter (OPEN) the TEST MENU [trnSP] in the SERVICE MENU and make the following selection.

FL tube display message : torq Adj oFF

- (2) Attach the 120-minute cassette tape for the operation check to the cassette weight and mount the weight on the mechanical deck.

Note : Since the loading operation will start almost immediately after you mount the cassette weight on the mechanical deck, mount it quickly.

- (3) Press FF to start the FF operation from the beginning to the end of the tape. Make sure the tape winding time complies with the following specifications.

Specifications :

Tape winding time Maximum 60 seconds

- (4) Press REW to start the REW operation from the end to the beginning of the tape. Make sure the tape winding time complies with the following specifications.

Specifications : REW mode time Maximum 60 seconds

- (5) Press EJECT. After the tape is wound, remove the cassette tape from the mechanical deck.

4-4. Tape Path Adjustment

4-4-1. Tape running check (1)

Check the tape running system when you replace the mechanical deck assembly, drum assembly, capstan motor, reel motor, pinch roller assembly, and DR-139 board. The following section explains how to check tape running conditions in the PLAY mode or CUE mode. (The state in which the capstan axis and pinch roller are in contact with each other.) Perform the following procedure while the cassette compartment is removed from the mechanical deck.

Equipment and Tools Required

Cassette tape (any 120-minute tape sold in the market) for checking the operation

Cassette weight (J-6224-140-A)

Cassette compartment dummy connector

Preparation

Insert the cassette compartment dummy connector in the CN106 connector on the DR-139 board.

Procedure

- (1) Enter (OPEN) the TEST MENU [trnSP] and make the following selection.

FL tube display message : Path Adj oFF

- (2) Attach the 120-minute cassette tape for the operation check to the cassette weight and mount them on the mechanical deck.

- (3) Press PLAY to start the playback mode.

- (4) Follow instructions ① and ② below to check the tape running conditions. See the Guide Position Diagram for each guide position.

- ① Confirm that the tape does not come out from the flanges of the S1, T1, S2, T2, S3, T3 and F guides.

Note : Tape curling is accepted as long as it is within the specified range (see figure below). If the S1 and T1 guides are displaced to a large height, tape curling may occur at the S2 and T2 guides. In that case, first follow the procedure

in "4-4-3. Tape path fine adjustment" and adjust the S1 and T1 guides, and then check item ① above.

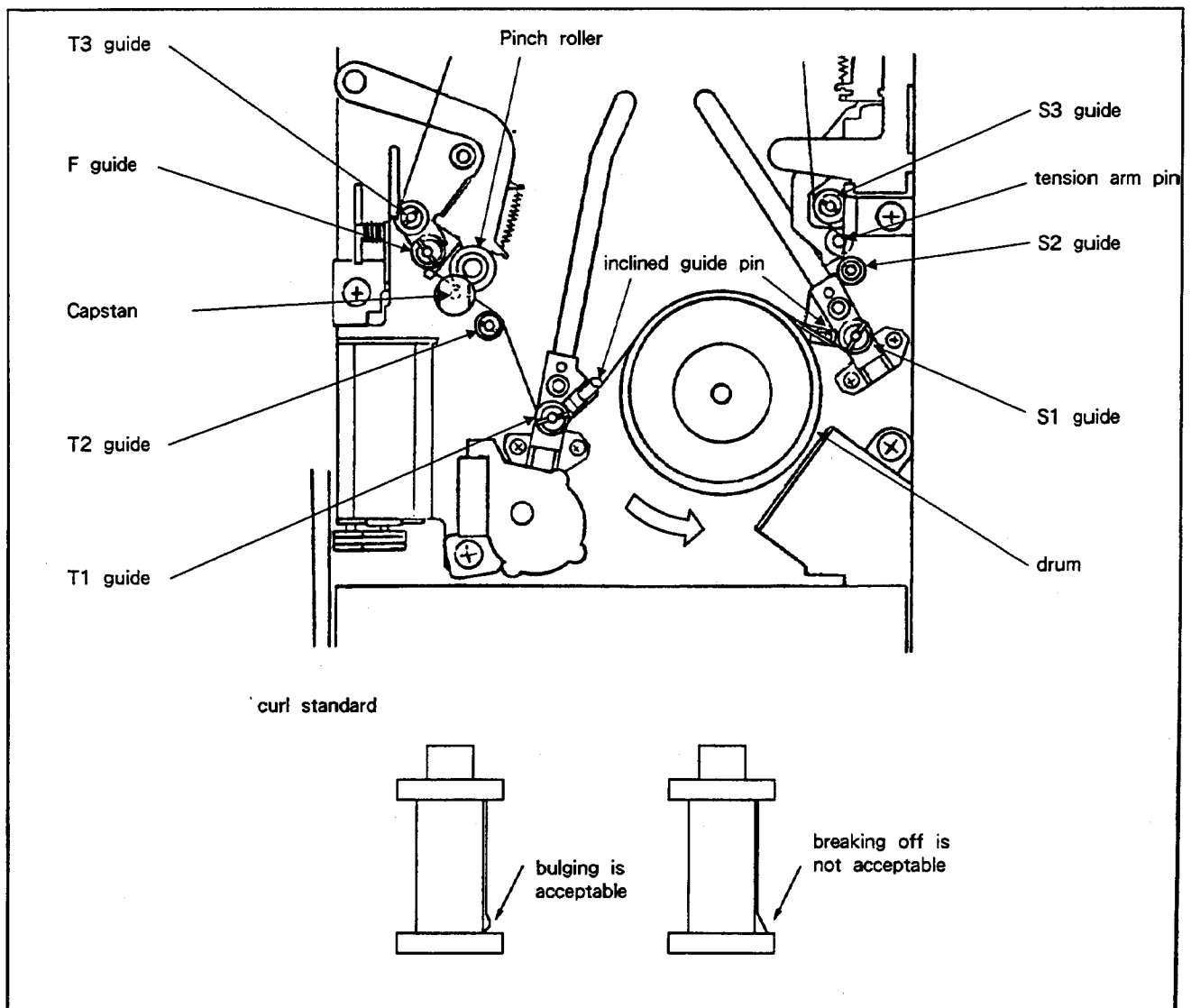
- ② Confirm that the tape is not slack end, wrinkled, or twisted before and after the pinch roller (capstan axis).

Note: When you switch between the FWD and REV modes, a tape may sometimes be stretched or twisted. If the tape recovers from such a slack end or twist within 2 seconds, the condition is acceptable. Wrinkling of tape, however, is not acceptable.

- (5) Check items 1 and 2 of step (4) above for each operation (FWD 1/5, 1/2, 1, 3, 8, 16; REV -1/5, -1/2, -1, -3, -8, -16) of the CUE mode.

Note: You can display the speed of each mode on the FL tube display. See "2-8. Service Menu" in Section 2 for information on the displaying method.

Example: FWD 1/5 → 0_2 (display)



4-4-2. Tape running check (2)

Check the tape running system when you replace the mechanical deck assembly, drum assembly, capstan motor, reel motor, and pinch roller assembly, and DR-139 board. The following section explains how to check the tape running conditions in the FF mode or REW mode. (The state in which the capstan axis and pinch roller are separated from each other.) Perform the following procedure while the cassette compartment is removed from the mechanical deck.

Equipment and Tools Required

Cassette tape (any 120-minute tape sold in the market) for checking the operation
Cassette weight (J-6224-140-A)
Cassette compartment dummy connector

Preparation

Insert the cassette compartment dummy connector in the CN106 connector on the DR-139 board.

Procedure

- (1) Enter (OPEN) the TEST MENU [trnSP] and make the following selection.
FL tube display message : PAth Adj OFF
- (2) Attach the 120-minute operation check cassette tape to the cassette weight and mount them on the mechanical deck.
- (3) Press FF to start the FF mode.
- (4) Follow the instructions below to check the tape running condition near the beginning of a tape. Confirm that the tape is not come out from the flanges of the S1, T1, S2, T2, S3, T3 and F guides.
Note : Tape curling is accepted as long as it is within the specified range (see page 4-15 for curl specifications).
- (5) Press REW to start the REW mode.
- (6) Follow the instructions indicated in step (4) to check the tape running condition near the end of a tape.

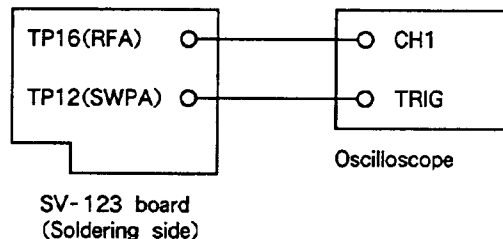
4-4-3. Tape path fine adjustment

Make fine adjustments of the tape path when you replace the mechanical deck assembly, drum assembly, capstan motor, reel motor, and pinch roller assembly, and DR-139 board. Perform the following adjustment and the subsequent items while the cassette compartment is mounted in the mechanical deck. Be sure to execute the procedure in "4-2. Mechanism Device Test" to make sure there are no errors when the cassette compartment is mounted in the mechanical deck.

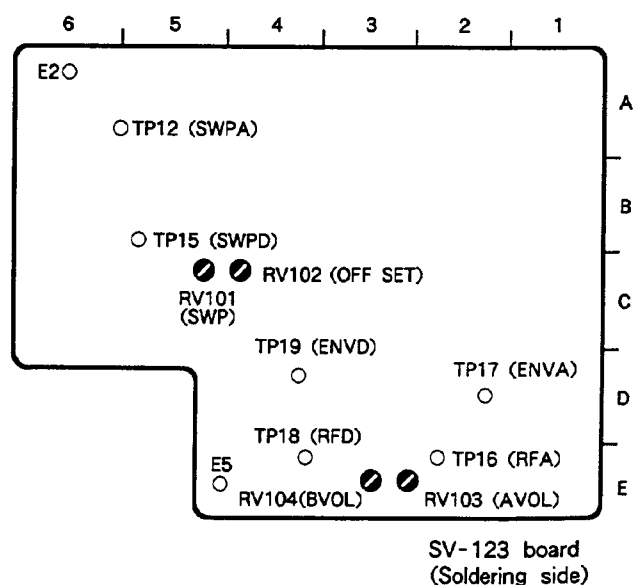
Equipment and Tools Required

Oscilloscope
CH1 : AC 200mV/DIV
TY-7251 Test tape (8-909-813-00)
Adjustment driver (J-6225-100-A)

Connections



Adjustment Location

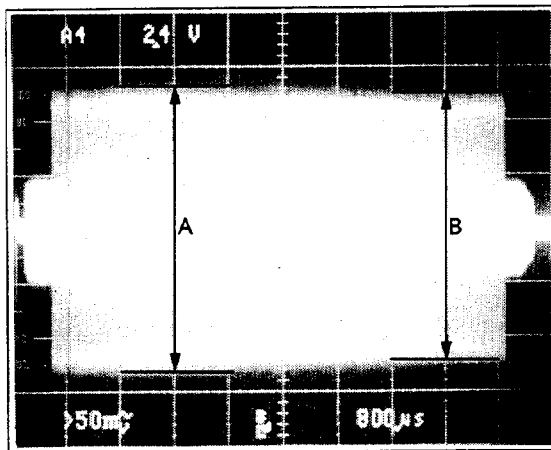


Procedure

- (1) Enter (OPEN) the TEST MENU [trnSP] and make the following selection.
FL tube display message : PatH Adj on
- (2) Connect the oscilloscope to the SV-123 board as indicated below.
CH1 : TP16 (RF-A) • E5 (GND), SV-123 board
TRIG : TP12 (SWP-A) • E2 (GND), SV-123 board
- (3) Load the TY-7251 test tape.
- (4) Press PLAY to playback the TY-7251 test tape.
- (5) Adjust RV102 on the SV-123 board to obtain maximum output of the RF signal waveform on the oscilloscope.
- (6) Make fine adjustments of the S1 and T1 guides so that the RF signal waveform of the oscilloscope CH1 complies with the following specifications.

Specifications : $\frac{B}{A} \times 100(\%) \geq 90\%$

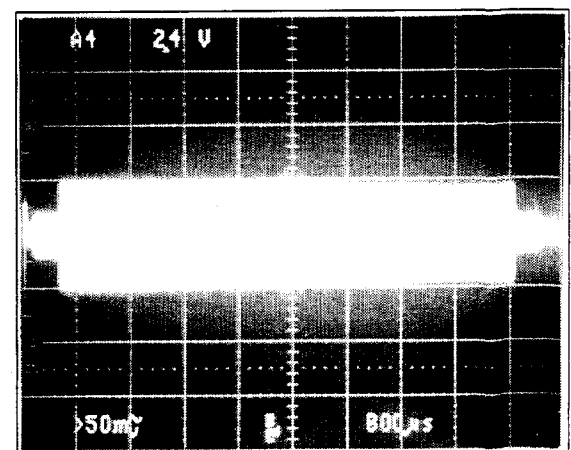
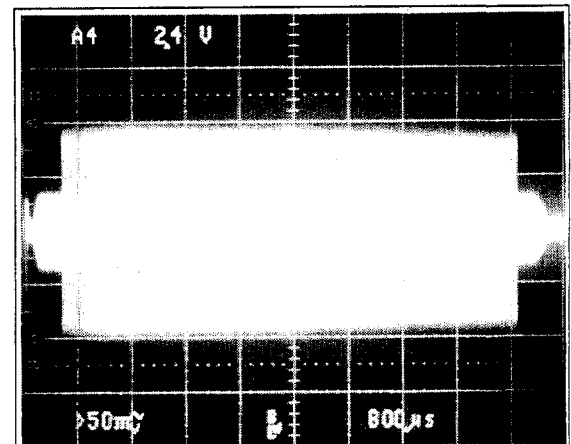
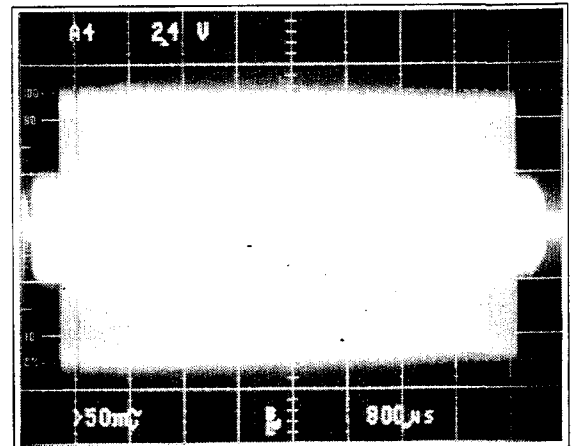
TP16 RF signal waveform A ch



max A
min B

Note : If you adjust the S1 and/or T1 guides, press PLAY again after pressing EJECT and make sure the RF signal waveform complies with the above specifications. (This is because, sometimes, a guide may become skewed when you apply force to the adjusting screwdriver during adjustment.)

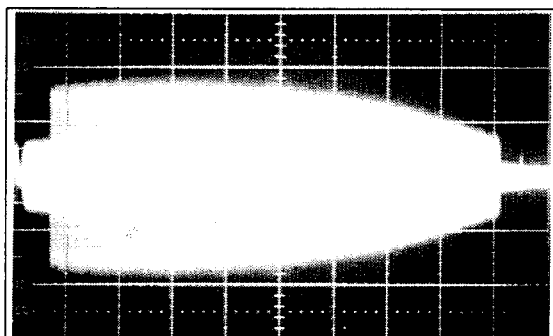
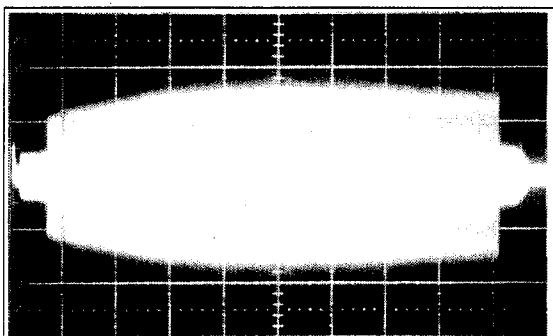
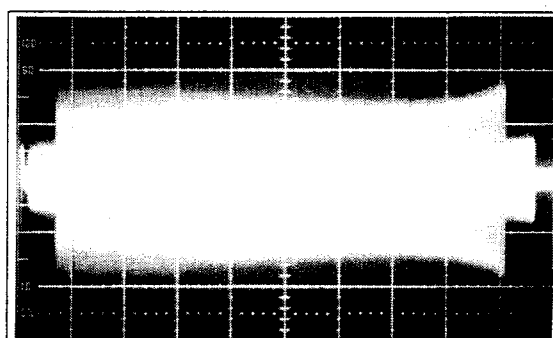
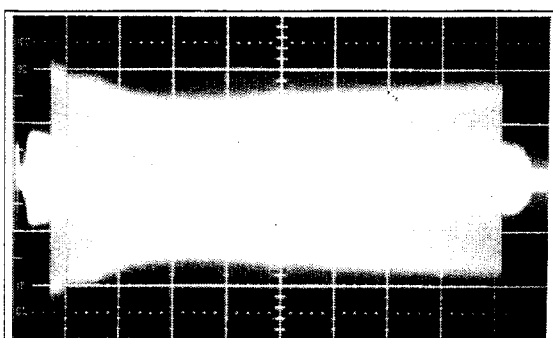
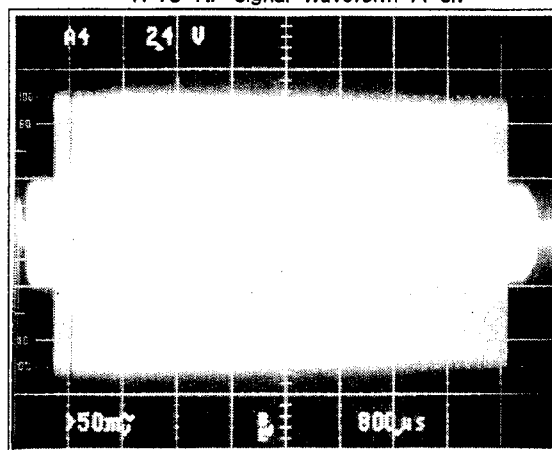
- (7) Turn RV102 (OFFSET VR) on the SV-123 board to make sure the above RF signal waveform is changed in a parallel direction.



→ OK

If the waveform is not good

TP16 RF signal waveform A ch

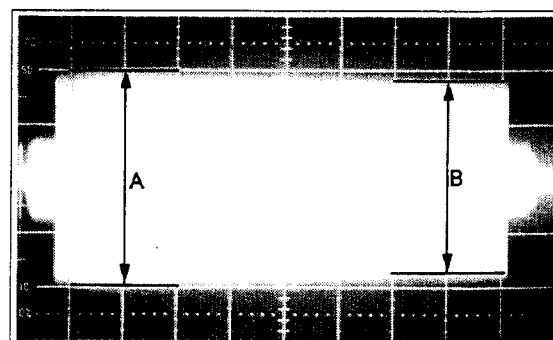


If the input waveform is not good,
readjust the S1 guide.

If the output waveform is no good,
readjust the T1 guide.

- (8) Turn $\odot$ RV102 (OFFSET VR) on the DR-139 board so that the RF signal waveform level will be at 80% (maximum). At that time, confirm that the RF signal waveform complies with the following specifications. If the waveform is not good, repeat steps (6) and (7).

Specifications : $\frac{B}{A} \times 100(\%) \geq 80\%$



TP16 RF signal waveform A ch

4-4-4. RF raise up time check

Equipment and Tools Required

Oscilloscope

CH1 : AC 200mV/DIV

TY-7251 Test tape (8-909-813-00)

Connections

Same as "4-4-3. Tape path fine adjustment."

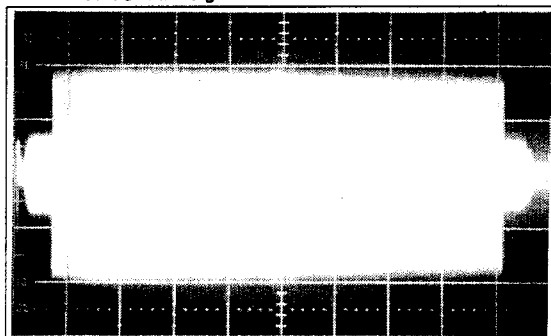
Adjustment Location

See adjustment location in "4-4-3. Tape path fine adjustment."

Procedure

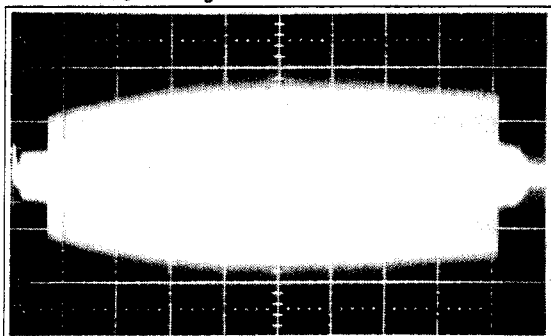
- (1) Enter (OPEN) the TEST MENU [trnSP] and make the following selection.
FL tube display message : PatH Adj on
- (2) Connect the oscilloscope to the SV-123 board as indicated below.
Oscilloscope
CH1 : TP16 (RF-A) • E5 (GND), SV-123 board
TRIG : TP12 (SWP-A) • E2 (GND), SV-123 board
- (3) Load the TY-7251 test tape in the mechanical deck.
- (4) Press PLAY to playback the TY-7251 test tape.
- (5) Press STANDBY to set the STANDBY mode to OFF. Make sure the drum rotation has stopped. Then, press PLAY to check if the oscilloscope waveform will stabilize within 2 seconds.

TP16 RF signal waveform A ch



OK

TP16 RF signal waveform A ch



NG

4-4-5. Lack of RF waveform check in FF/REW

Equipment and Tools Required

Oscilloscope

CH1 : AC 200mV/DIV

Cassette tape (any 120-minute tape sold in the market) for checking the operation

Connections

Same as "4-4-3. Tape path fine adjustment."

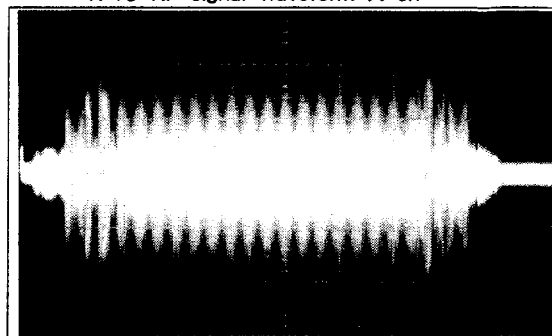
Adjustment Location

See adjustment location in "4-4-3. Tape path fine adjustment."

Procedure

- (1) Set the TEST MENU [trnSP] to the following selection.
FL tube display message : PatH Adj oFF
- (2) Connect the oscilloscope to the SV-123 board as indicated below.
Oscilloscope
CH1 : TP16 (RF-A) • E5 (GND), SV-123 board
TRIG : TP12 (SWP-A) • E2 (GND), SV-123 board
- (3) Load the 120-minute cassette tape for checking the operation in the mechanical deck.
- (4) Perform FF and REW operations at the beginning and end of the tape and confirm that the RF signal waveform of the oscilloscope does not lack.

TP16 RF signal waveform A ch



OK

TP16 RF signal waveform A ch



NG

4-4-6. Overall tape path check

Equipment and Tools Required

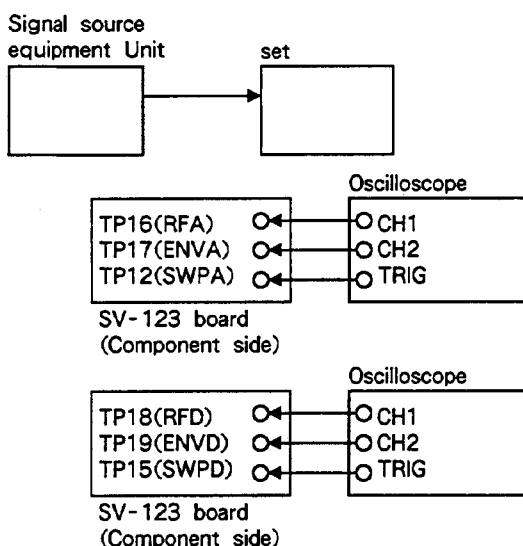
Oscilloscope

Cassette tape (any 120-minute tape sold in the market) for checking the operation

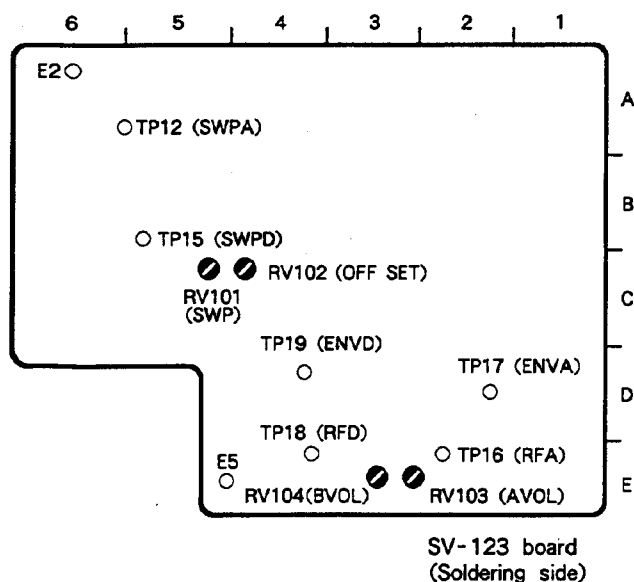
Signal source equipment (low frequency oscillator)

A signal can be a sine wave or a music signal with a signal input level of about standard level.

Connections



Measurement Location



Procedure

(1) Enter (OPEN) the TEST MENU [trnSP] and make the following selection.

FL tube display message : PatH Adj oFF

(2) Transmit an input signal level of about 0dB from the signal source equipment.

(3) Load the 120-minute cassette tape for checking the operation in the mechanical deck.

(4) Set the recording mode to ASSEMBLE and record the signal of step (2) above (for about 2 minutes).

(5) Playback the recorded portion and check the following items.

Leading head RF check

(6) Connect the oscilloscope to the SV-123 board as indicated below.

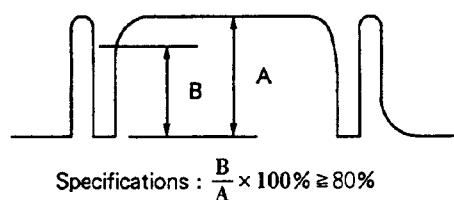
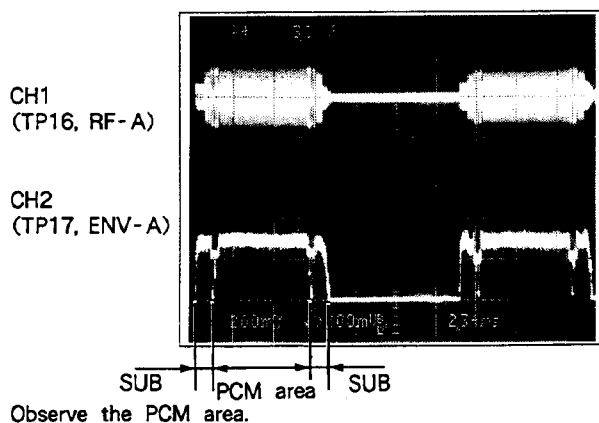
Oscilloscope

CH1 : TP16 (RF-A) · E5 (GND), SV-123 board

CH2 : TP17 (ENV-A) · E5 (GND), SV-123 board

TRIG : TP12 (SWP-A) · E2 (GND), SV-123 board

(7) Make sure the PCM area of the oscilloscope CH2 waveform (TP17, envelope) complies with the following specifications.



- (8) After pressing EJECT, load a cassette tape to check the operation again. Press PLAY and check if the oscilloscope CH2 waveform (TP17, envelope) attains the specification range indicated in step (7) within 3 seconds (the waveform stabilizes within 3 seconds).
- (9) In the same way as step (8), change the mode to PLAY from REV (x1) and check if the oscilloscope CH2 waveform (TP16, envelope) attains the specification range indicated in step (7) within 2 seconds (the waveform stabilizes within 2 seconds).
- (10) Press STOP.

Trailing head RF check

- (11) Connect the oscilloscope to the SV-123 board as indicated below.

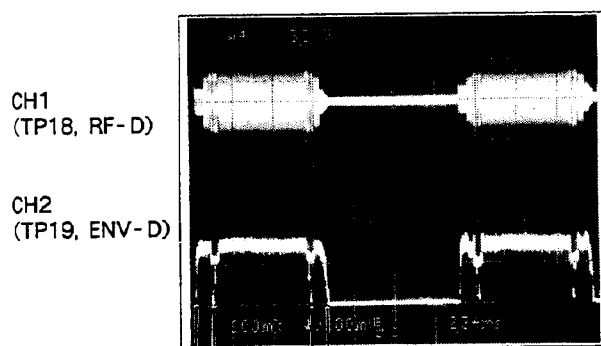
Oscilloscope

CH1 : TP18 (RF-D) • E5 (GND), SV-123 board

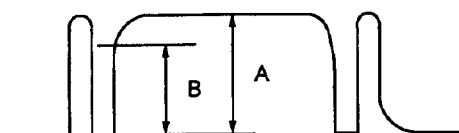
CH2 : TP19 (ENV-D) • E5 (GND), SV-123 board

TRIG : TP15 (SWP-D) • E2 (GND), SV-123 board

- (12) Press PLAY to playback the portion recorded in step (4) and check the following item.
- (13) Make sure the PCM area of oscilloscope CH2 waveform (TP19, envelope) complies with the following specifications.



SUB PCM area SUB
Observe the PCM area.



$$\text{Specifications : } \frac{B}{A} \times 100\% \geq 80\%$$

- (14) After pressing EJECT, load a cassette tape to check the operation again. Press PLAY and check if the oscilloscope CH2 waveform (TP19, envelope) attains the specification range indicated in step (13) within 3 seconds (the waveform stabilizes within 3 seconds).
- (15) In the same way as step (14), change the mode to PLAY from REV (x1) and check if the oscilloscope CH2 waveform (TP19, envelope) attains the specification range indicated in step (13) within 2 seconds (the waveform becomes stable within 2 seconds).
- (16) Press EJECT and remove the cassette tape for checking the operation.

4-5. Servo Block Adjustment

4-5-1. SWP position adjustment

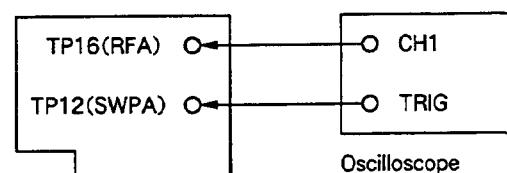
Adjust the SWP position when you replace the mechanical deck assembly, drum assembly, and SV-123 board. Perform the following adjustment while the cassette compartment is mounted in the mechanical deck.

Equipment and Tools Required

Oscilloscope

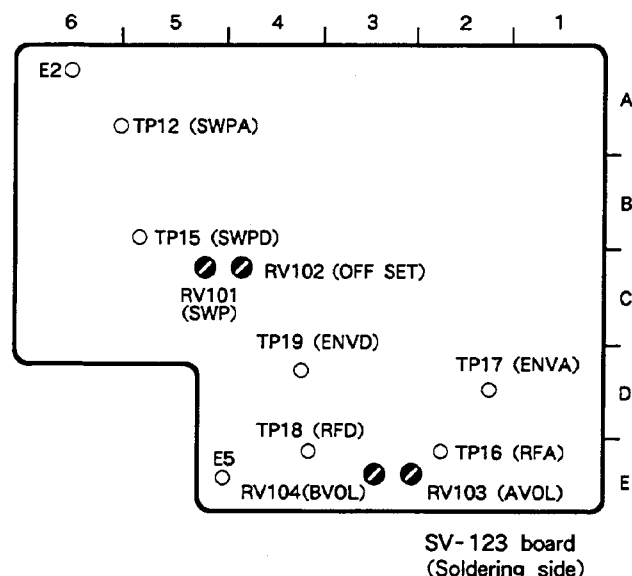
TY-7251 Test tape (8-909-813-00)

Connections



SV-123 board
(Soldering side)

Adjustment Location

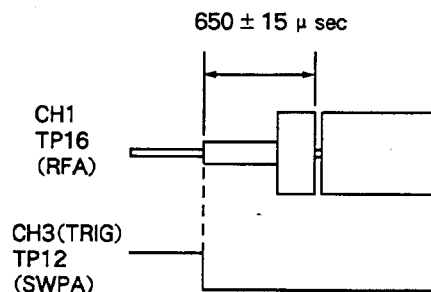


Procedure

- (1) Enter (OPEN) the TEST MENU [trnSP] and make the following selections.
FL tube display message : PatH Adj on and
FL tube display message : dPG Adj on
- (2) Connect the oscilloscope to the SV-123 board as indicated below.
CH1 : TP16 (RF-A) • E5 (GND), SV-123 board
CH2 : TP18 (RF-D) • E5 (GND), SV-123 board
CH3 : TP12 (SWP-A) • E1 (GND), SV-123 board
- (3) Load the TY-7251 test tape.
- (4) Press PLAY to playback the TY-7251 test tape.
- (5) Adjust $\bullet$ RV102 on the SV-123 board to obtain maximum output of the RF waveform of oscilloscope CH1.
- (6) Adjust $\bullet$ RV101 on the SV-123 board so that the RF output waveform of oscilloscope CH1 complies with the following specifications.
Specifications :
T of the RF A output waveform = 650usec. $\pm$ 15usec.
Adjustment Location : $\bullet$ RV101, SV-123 board
- (7) Press EJECT to remove the TY-7251 test tape from the mechanical deck.

- (8) Select the following TEST MENU modes.

FL tube display message : dPG Adj oFF and
FL tube display message : PatH Adj oFF



4-5-2. ATF playback AGC adjustment

Adjust the ATF playback AGC when you replace the mechanical deck assembly and drum assembly. Perform the following adjustment while the cassette compartment is mounted in the mechanical deck.

Equipment and Tools Required

Oscilloscope
TY-7111D Test tape (8-909-820-00)

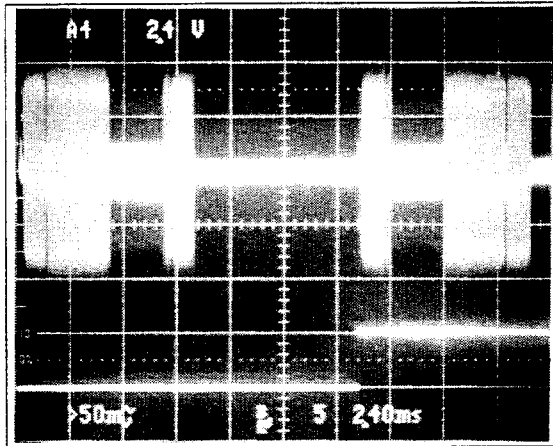
Connections

Same as "4-5-1. SWP position adjustment"

Procedure

- (1) Enter (OPEN) the TEST MENU [trnSP] and make the following selections.
FL tube display message : AGC Adj on
(flashing)
- (2) Load the TY-7111D test tape.

- (3) Press PLAY to playback the TY-7111D test tape. At that time, make sure the RF waveform is output properly. The output level of 1.57MHz should be 250mV or more.



- (4) Press SET. When you press SET, the message "ON" in the Work Area of FL tube display will be lit instead of flashing. This status indicates that the ATF playback AGC gain is being automatically adjusted (set). The adjusted gain will be displayed on the FL tube display.
- (5) Select the following TEST MENU mode and then press SET.
FL tube display message : AGC Adj oFF
- (6) Press EJECT to remove the TY-7111D test tape from the mechanical deck.

4-6. Recording/Playback Block Adjustment (Recording current level adjustment)

Adjust the recording current level when you replace the mechanical deck assembly, drum assembly, and RF-31 board assembly. Perform the adjustment while the cassette compartment is mounted in the mechanical deck.

4-6-1. Adjustment using the RF LEVEL CHECKER PD-817

This section provides information on the adjustment method using the RF LEVEL CHECKER PD-817, which is a dedicated adjustment tool. Follow the sequence below to make adjustments:

Equipment and Tools Required

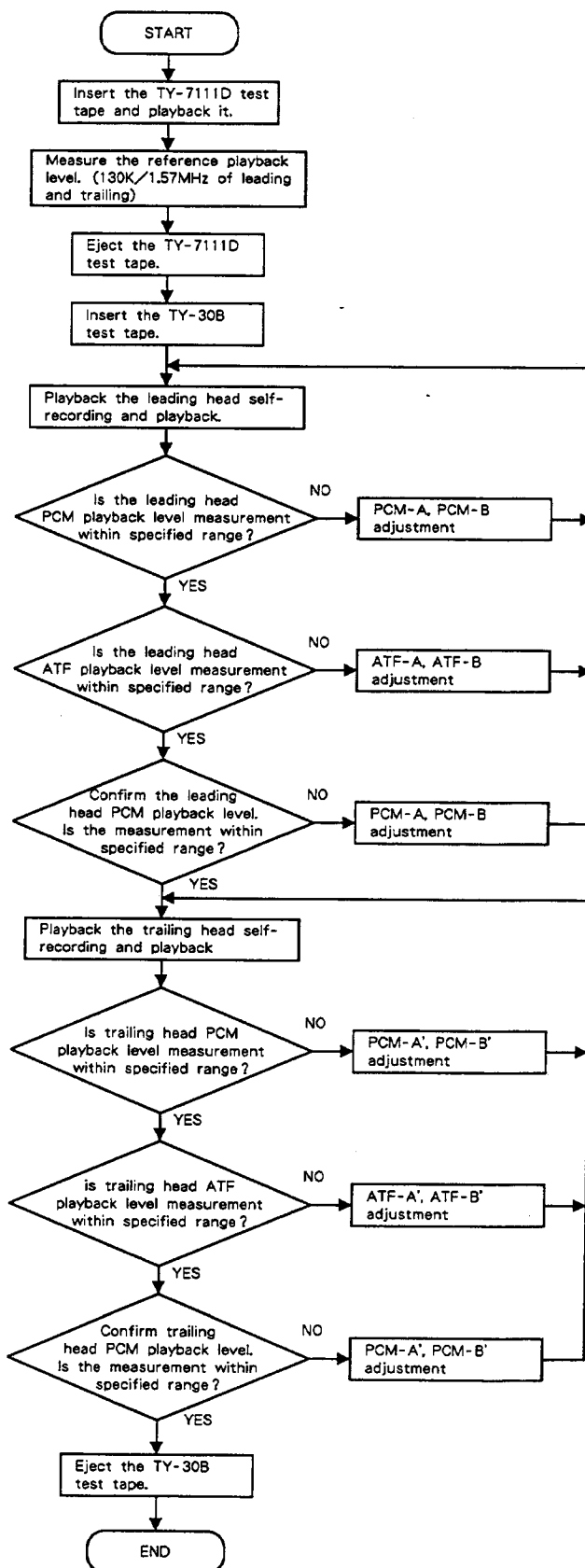
Oscilloscope

RF LEVEL CHECKER PD-817: (part no.: J-6228-170-A)

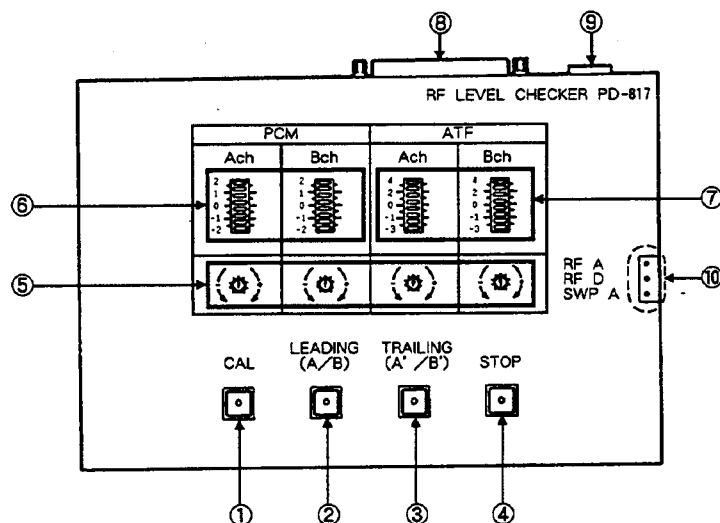
TY-7111D Test tape (part no.: 8-909-820-00)

TY-30B Test tape (part no.: 8-892-358-00)

Adjustment procedure



RF LEVEL CHECKER PD-817



Switches

① CAL ;

Used for automatically measuring the reference level of the TY-7111D test tape. The indicator flashes during measurement. The flashing stops and the measurement is finished (the indicator lights.).

② LEADING (A, B) ;

Used for self-recording and playback (automatic measurement) of PCM and ATF of the leading head using the TY-30B test tape. The indicator flashes during self-recording and playback. The flashing stops and the measurement is finished (the indicator lights.).

③ TRAILING (A, B) ;

Used for self-recording and playback (automatic measurement) of PCM and ATF of the trailing head using the TY-30B test tape. The indicator flashes during self-recording and playback. The flashing stops and the measurement is finished (the indicator lights.).

④ STOP ;

Used for canceling the measurements of ①, ② and ③ above.

Control

⑤ Offset dial ;

Used for setting the measurement level of the TY-7111D test tape in accordance with the correction value table provided with the TY-7111D test tape to be used.

Level meter

⑥ PCM Ach, Bch ;

Used for displaying the measurement results compared with the reference level of the TY-7111D test tape when the leading/trailing head PCM self-recording and playback level has been measured.

⑦ ATF Ach, Bch ;

Used for displaying the measurement results compared with the reference level of the TY-7111D test tape when the leading/trailing head ATF self-recording and playback level has been measured.

Connectors

⑧ 37-Pin remote connector (D-SUB, female) ;

Used to connect the supplied 37P parallel remote cable.

⑨ 6-pin connector (CN1) ;

Used to connect the supplied 6P connector with RF-EXT board.

⑩ Monitor output (RF A, RF B, SWP-A) terminals ;

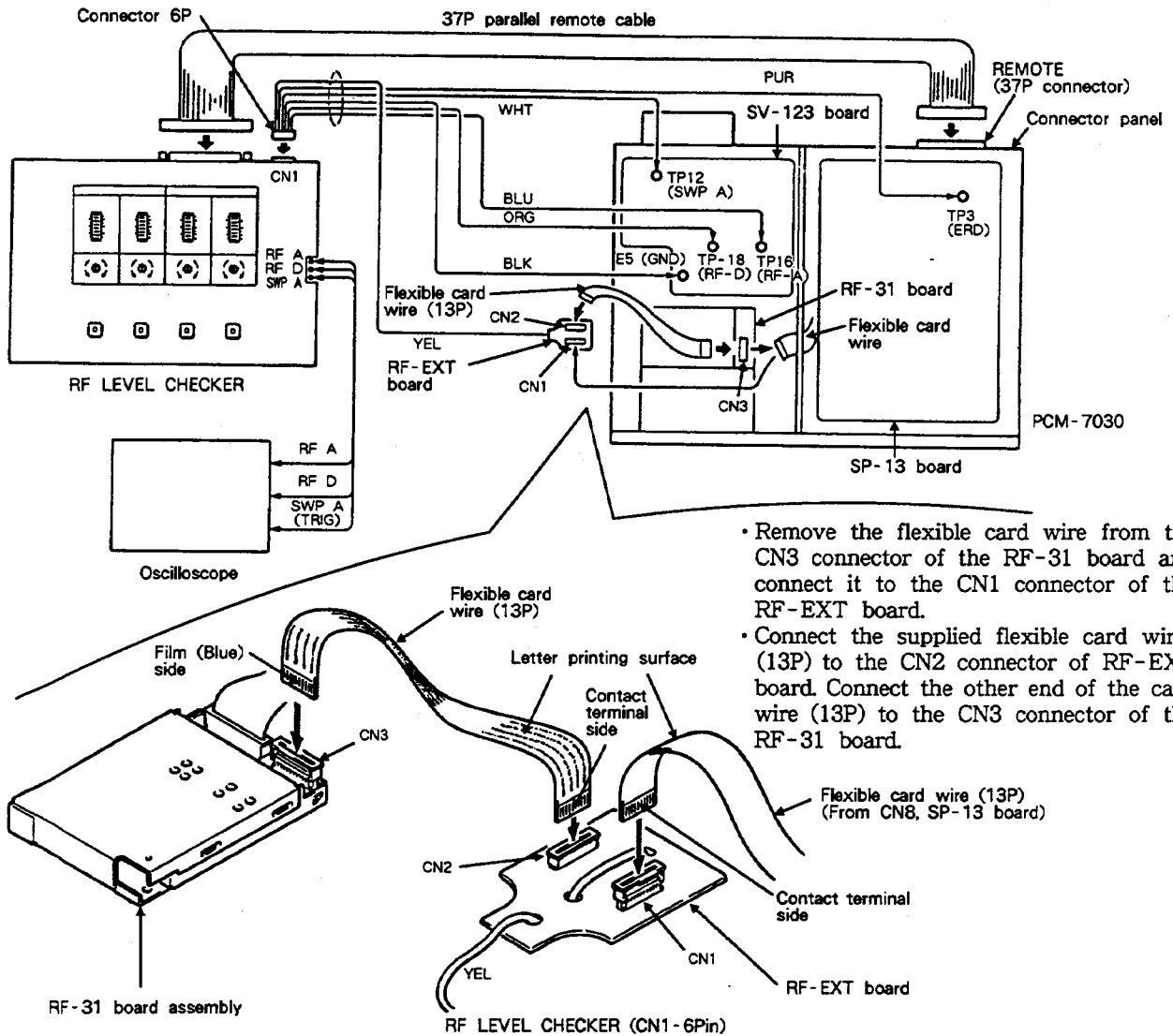
Used to connect the oscilloscope and monitor the RF A and RF B signals (SWP A is TRIG).

Accessories supplied

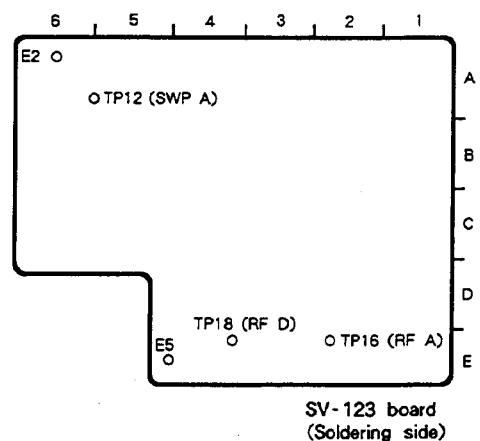
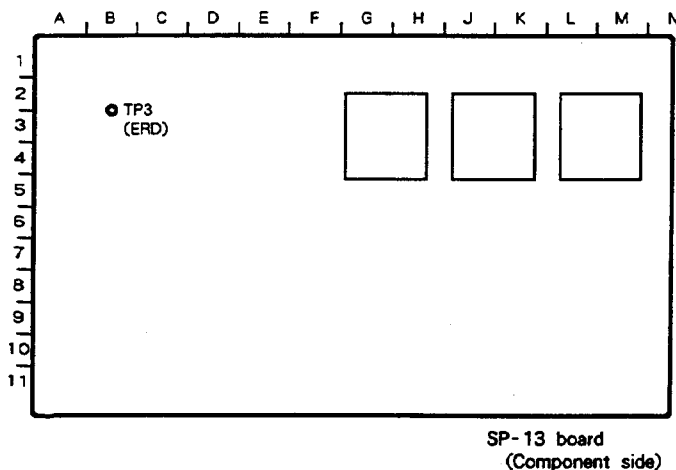
- 37P parallel remote cable : 1
- Flexible card wire 13P : 1
- RF-EXT board : 1

Connections

Note : When making the connections, be sure to turn off the power of the PCM-7030.



Measurement location



Preparations

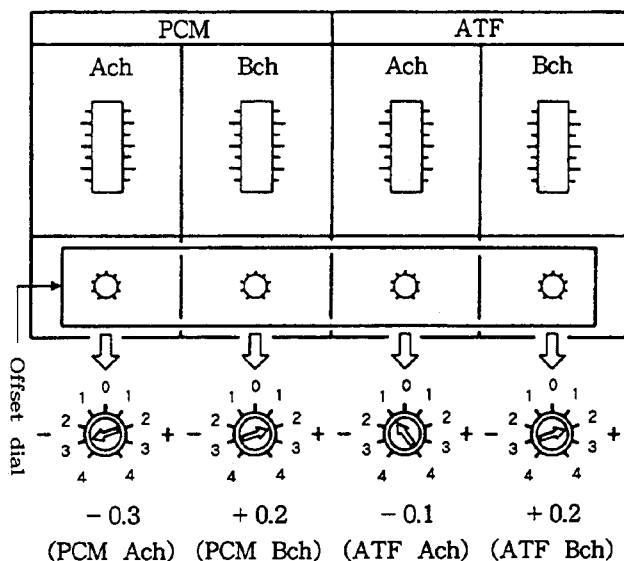
1. Use the offset dial of the RF level checker and set the correction values of the 1.57MHz and 130KHz Ach/Bch in accordance with the correction value table provided with the TY-7111D test tape to be used.

Setting example

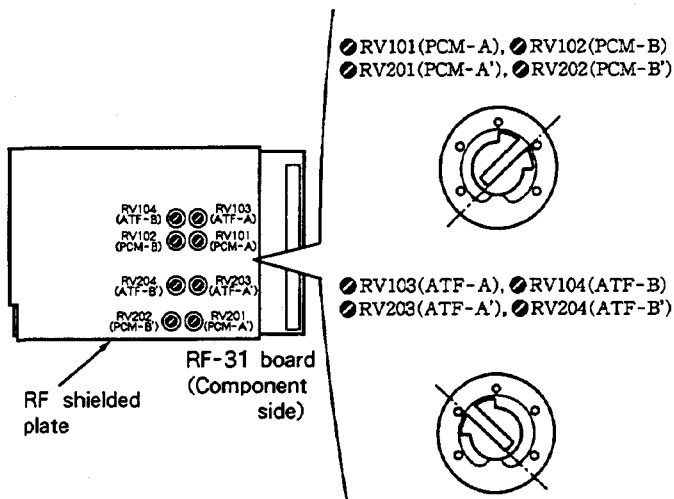
Example of correction value table :

	130.7 (KHz)	1.568 (MHz)
Ach	-0.1	-0.3
Bch	+0.2	+0.2

Offset dial setting (In the case of above correction values)



2. Set each control volume on the RF-31 board mechanically as indicated below.

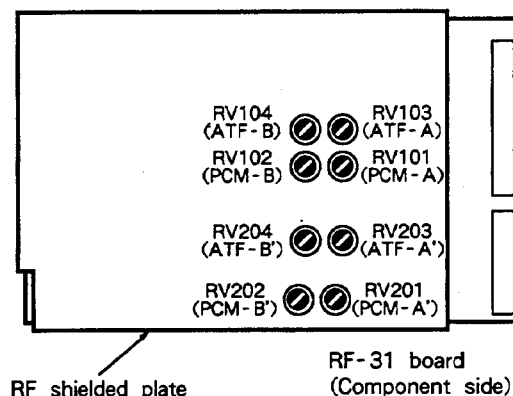


Switches and control setting

PCM-7030 front panel

SYNC mode switch ; INT (internal synchronization mode)

Adjustment location



1. Leading and trailing heads PCM/ATF reference recording current level measurement (TY-7111D test tape playback level measurement)

- (1) Insert the TY-7111D test tape.
- (2) Press the CAL switch of the RF LEVEL CHECKER. The playback level of 1.57MHz/130KHz of the leading and trailing heads are automatically measured, The CAL indicator flashes during measurement.
- (3) The flashing stops and the measurement is finished (The indicator lights.).
- (4) Eject the TY-7111D test tape.

Note : Rapid Flashing of the CAL Indicator :

If the playback level data on the TY-7111D test tape cannot be fed for the 128DAT frame, the CAL indicator flashes rapidly.

In this case, perform the following procedures.

- ① Advance the test tape (playback portion) slightly and perform the measurement again.
- ② Replace the TY-7111D test tape with a new one and perform the measurement. If the situation remains the same even when the new test tape is used, the drum may be defective. Replace the drum.

2. Leading head PCM/ATF recording current level adjustment

Notes on adjustment :

1. When adjusting ●RV101, ●RV102, ●RV103, and ●RV104 be aware of the following items.

- 1) Mutual relationship between Ach and Bch of PCM adjustment level

- When adjusting the level of the Ach (Bch) indicator to high, the level of the Bch (Ach) indicator will drop slightly.
- When adjusting the level of the Ach (Bch) indicator to low, the level of the Bch (Ach) indicator will drop slightly.

- 2) Mutual relationship between PCM level and ATF level

- When adjusting the level of the Ach PCM indicator to high (low), the level of the Ach ATF indicator will increase (drop) slightly.

- When adjusting the level of the Bch PCM indicator to high (low), the level of the Bch ATF indicator will increase (drop) slightly.

2. Note on the test menu settings when the TY-30B test tape is loaded.

The test menu "tEst SiG A-tEst in" previously set, will be voided if the tape is repeatedly loaded and ejected. In this case, the test menu "tEst SiG A-tEst in" should be set again, otherwise recordings are not possible.

Leading head PCM (Ach, Bch) recording current level adjustment

- (1) Load the TY-30B test tape (blank).
- (2) Enter (OPEN) the SERVICE MENU and set the following TEST MENU mode.

FL tube display message : tEst SiG A-tSt in (The ALARM indicator flashes and the ASSEMBLE key indicator lights.)

- (3) Press the LEADING switch of the RF level checker to perform the self-recording and playback (automatic measurement).

The LEADING switch indicator flashes during self-recording and playback. The flashing stops and the measurement is finished (The indicator lights.).

Note : If the TY-30B test tape to be used already has a recording, the tape will play for 15 seconds and then stop. If this happens, replace the TY-30B test tape with a blank tape and retry from step (3).

- (4) Make sure the level meter indication (Ach and Bch PCM levels) of the RF level checker complies with the following specifications.

If the playback Ach and Bch PCM levels do not comply with the specifications, adjust

●RV101 and ●RV102 on the RF-31 board as indicated below.

If the indication level of a level meter is higher than the specifications :

- Leading head Ach PCM level ;

Turn ●RV101 counterclockwise.

- Leading head Bch PCM level;

Turn ●RV102 counterclockwise.

If the indication level of a level meter is lower than the specifications:

- Leading head Ach PCM level;

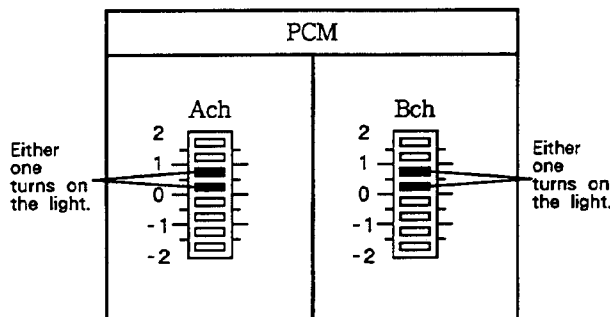
Turn ●RV101 clockwise.

- Leading head Bch PCM level;

Turn ●RV102 clockwise.

Specifications:

Level indicators of the PCM (Ach, Bch) level meter of the RF LEVEL CHECKER = Light indicators between 0dB and 1dB.



Adjustment: ●RV101 (Ach, PCM), RF-31 board

●RV102 (Bch, PCM), RF-31 board

Note: Rapid flashing of the LEADING switch

indicator means that enough data cannot be gathered for the 128 DAT frame because the recording current level is considerably lower than the reference level. In this case, the indicator flashes rapidly.

Under this condition, adjust the control volume (turn ●RV101 and ●RV102 clockwise). Perform the measurement by pressing the LEADING switch again.

If the same condition occurs even when you increase the recording level to maximum (by turning ●RV101 and ●RV102 clockwise), the TY-30B test tape may be slack or the drum may be defective. Therefore, replace the TY-30B test tape or the drum with new ones.

- (5) Repeat steps (3) and (4) until you get the playback level that complies with the specifications indicated in step (4).

Leading head ATF (Ach, Bch) recording current level adjustment

- (6) Press the LEADING switch of the RF LEVEL CHECKER to perform the self-recording and playback (automatic measurement).

The LEADING switch indicator flashes during self-recording and playback. The flashing stops and the measurement is finished (the indicator lights.).

- (7) Make sure the level meter indication (leading head Ach and Bch ATF level) of the RF LEVEL CHECKER complies with the following specifications.

If the playback Ach and Bch ATF levels do not comply with the specifications, adjust ●RV103 and ●RV104 on the RF-31 board as indicated below.

If the indication level of a level meter is higher than the specifications:

- Leading head Ach ATF level;

Turn ●RV103 counterclockwise.

- Leading head Bch ATF level;

Turn ●RV104 counterclockwise.

If the indication level of a level meter is lower than the specifications:

- Leading head Ach ATF level;

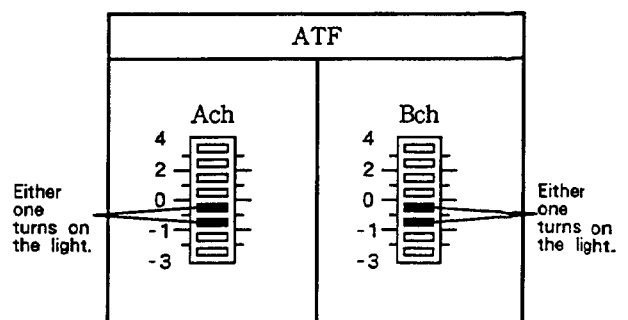
Turn ●RV103 clockwise.

- Leading head Bch ATF level;

Turn ●RV104 clockwise.

Specifications:

Level indicators of the ATF (Ach, Bch) level meter of the RF LEVEL CHECKER = Light indicators between -1dB and 0dB.



Adjustment: ●RV103 (Ach, ATF), RF-31 board

●RV104 (Bch, ATF), RF-31 board

(8) Repeat steps (6) and (7) until you get the playback level that complies with the specifications indicated in step (7).

(9) After adjusting the ATF level, make sure the PCM (Ach, Bch) level indication complies with the specifications indicated in step (4).

If the PCM level does not comply with the specifications, make adjustments as indicated in step (3) onwards.

3. Trailing head PCM/ATF recording current level adjustment

Notes on adjustment :

1. When adjusting ⌚RV201, ⌚RV202, ⌚RV203, and ⌚RV204 be aware of the following items.

1) Mutual relationship between Ach and Bch of PCM adjustment level

- When adjusting the level of the Ach (Bch) indicator to high, the level of the Bch (Ach) indicator will drop slightly.
- When adjusting the level of the Ach (Bch) indicator to low, the level of the Bch (Ach) indicator will drop slightly.

2) Mutual relationship between PCM level and ATF level

- When adjusting the level of the Ach PCM indicator to high (low), the level of the Ach ATF indicator will increase (drop) slightly.
- When adjusting the level of the Bch PCM indicator to high (low), the level of the Bch ATF indicator will increase (drop) slightly.

2. Note on the test menu settings when the TY-30B test tape is loaded.

The test menu "tESt SiG d-tESt in" previously set, will be voided if the tape is repeatedly loaded and ejected. In this case, the test menu "tESt SiG d-tESt in" should be set again otherwise recordings are not possible.

Trailing head PCM (Ach, Bch) recording current level adjustment

(1) Insert the TY-30B test tape (blank).

(2) Enter (OPEN) the SERVICE MENU and select the

following TEST MENU mode.

FL tube display message : tESt SiG d-tSt in
(Only the ALARM indicator flashes.)

(3) Press the TRAILING switch of the RF level checker to perform the self-recording and playback (automatic measurement).

The TRAILING switch indicator flashes during self-recording and playback. The flashing stops and the measurement is finished (The indicator lights.)

(4) Make sure the level meter indication (Ach and Bch PCM level) of the RF level checker complies with the following specifications.

If the playback Ach and Bch PCM levels do not comply with the specifications, adjust

⌚RV201 and ⌚RV202 on the RF-31 board as indicated below.

If the indication level of a level meter is higher than the specifications :

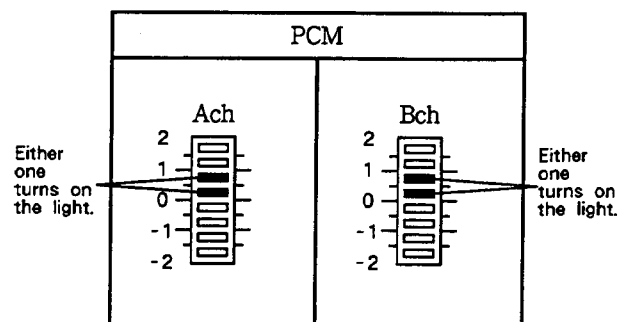
- Trailing head Ach PCM level ;
Turn ⌚RV201 counterclockwise.
- Trailing head Bch PCM level ;
Turn ⌚RV202 counterclockwise.

If the indication level of a level meter is lower than the specifications :

- Trailing head Ach PCM level ;
Turn ⌚RV201 clockwise.
- Trailing head Bch PCM level ;
Turn ⌚RV202 clockwise.

Specifications :

Level indicators of the PCM (Ach, Bch) level meter of the RF LEVEL CHECKER = Light indicators between 0dB and 1dB.



Adjustment : ⌚RV201 (Ach, PCM), RF-31 board
⌚RV202 (Bch, PCM), RF-31 board

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Note : Rapid flashing of the TRAILING switch indicator means that enough data cannot be gathered for the 128DAT frame because the recording current level is considerably lower than the reference level. In this case, the indicator flashes rapidly.

Under this condition, adjust the control volume (turn ⌚RV201 and ⌚RV202 clockwise). Perform the measurement by pressing the TRAILING switch again.

If the same condition occurs even when you increase the recording level to maximum (by turning ⌚RV201 and ⌚RV202 clockwise), the TY-30B test tape may be slack or the drum may be defective. Therefore, replace the TY-30B test tape or the drum with new ones.

- (5) Repeat steps (3) and (4) until you get the playback level that complies with the specifications indicated in step (4).

Trailing head ATF (Ach, Bch) recording current level adjustment

- (6) Press the TRAILING switch of the RF LEVEL CHECKER to perform the self-recording and playback (automatic measurement).

The TRAILING switch indicator flashes during self-recording and playback. The flashing stops and the measurement is finished (The indicator lights.).

- (7) Make sure the level meter indication (trailing head Ach and Bch ATF level) of the RF LEVEL CHECKER complies with the following specifications. If the playback Ach and Bch ATF levels do not comply with the specifications, adjust ⌚RV203 and ⌚RV204 on the RF-31 board as indicated below.

If the indication level of a level meter is higher than the specifications :

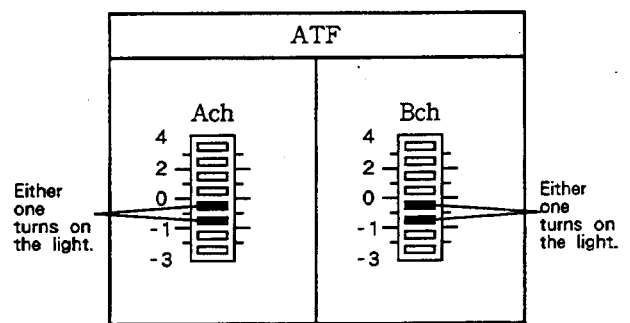
- Trailing head Ach ATF level ;
Turn ⌚RV203 counterclockwise.
- Trailing head Bch ATF level ;
Turn ⌚RV204 counterclockwise.

If the indication level of a level meter is lower than the specifications :

- Trailing head Ach ATF level ;
Turn ⌚RV203 clockwise.
- Trailing head Bch ATF level ;
Turn ⌚RV204 clockwise.

Specifications :

Level indicators of the ATF (Ach, Bch) level meter of the RF LEVEL CHECKER = Light indicators between -1dB and -0dB.



Adjustment : ⌚RV203 (Ach, ATF), RF-31 board
⌚RV204 (Bch, ATF), RF-31 board

- (8) Repeat steps (6) and (7) until you get the playback level that complies with the specifications indicated in step (7).
- (9) After adjusting the ATF level, make sure the PCM (Ach, Bch) level indication complies with the specifications indicated in step (4).
If the PCM level does not comply with the specifications, make adjustments as indicated in step (3) onwards.

4-6-2. Adjustment using a spectrum analyzer

This section provides information on the adjustment method using the spectrum analyzer. Follow the sequence below to make adjustments:

Adjustment Location

1. Leading head PCM recording current level adjustment
2. Leading head ATF recording current level adjustment
3. Trailing head PCM recording current level adjustment
4. Trailing head ATF recording current level adjustment

Note: Perform the adjustment while the cassette compartment is mounted in the mechanical deck.

Equipment and Tools Required

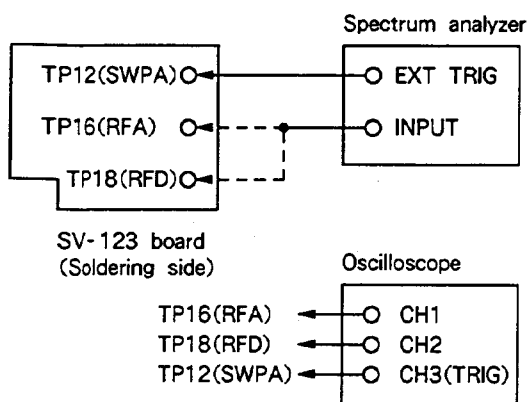
Spectrum analyzer

Oscilloscope

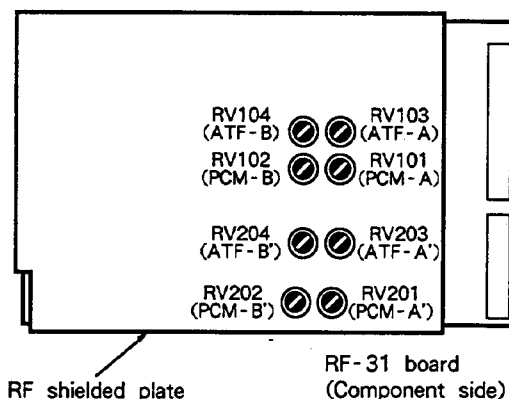
TY-7111D Test tape (8-909-820-00)

TY-30B test tape (8-892-358-00)

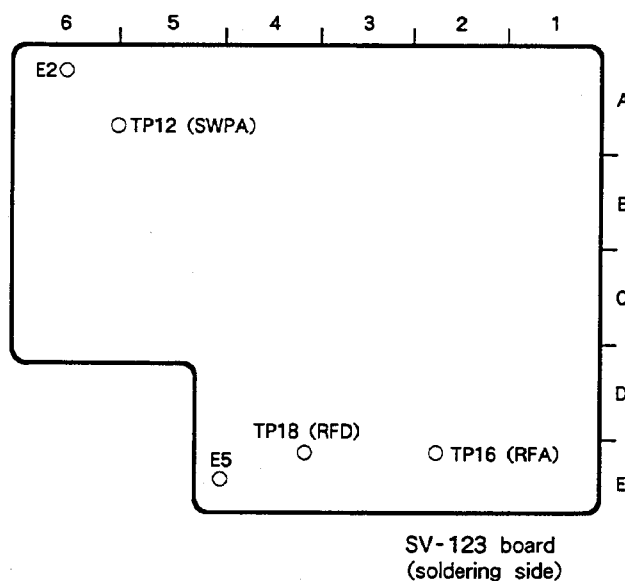
Connections



Adjustment Location

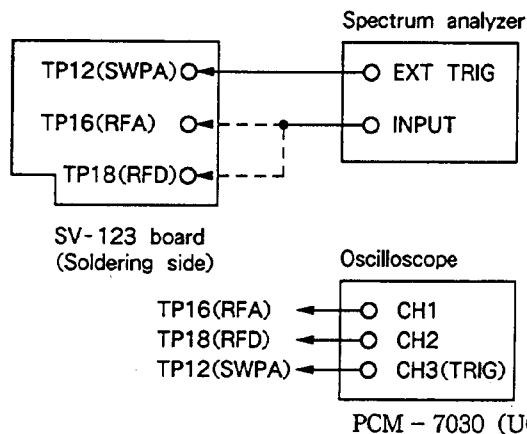


Measurement Location



1. Leading head PCM recording current level adjustment

Leading head Ach recording current level adjustment
(1) Connect the spectrum analyzer to the SV-123 board as shown below.

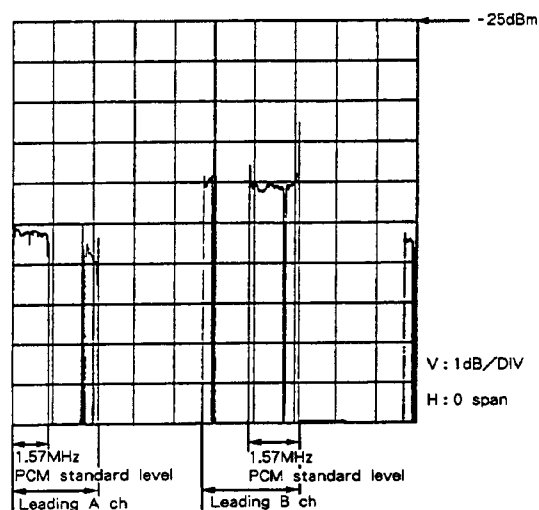


- (2) Set the spectrum analyzer as indicated below.

Center frequency : 1.57MHz
 Reference level : -25dBm
 Frequency span : 0Hz
 Resolution Bandwidth (RBW) : 30kHz
 Video Bandwidth (VBW) : 300kHz
 Input ATT : 10dB
 SWP : 30msec.

- (3) Load the TY-7111D test tape and play the tape.

- (4) Find the average of the RF output waveforms using the spectrum analyzer and store the data in the spectrum analyzer memory.



- (5) Press EJECT to remove the TY-7111D test tape.

- (6) Load the TY-30B test tape (blank).

Note: You need to load the TY-30B test tape to specify the "tESt SiG A-157_13" of the TEST MENU.

- (7) Enter (OPEN) the SERVICE MENU and select the following TEST MENU mode.

FL tube display message: tESt SiG OFF

- (8) Hold down the DATA key and turn the SEARCH dial clockwise until the following message appears. Then, press SET.

FL tube display message: tESt SiG A-157_13
 (flashing → ON)

- (9) Press REC and PLAY to record the test signal specified in step (7) (for about 30 seconds).

Note: Since the time code will not be recorded

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in this mode, specify the display counter mode and use it as a guide to find the recorded portion of a tape.

- (10) Playback the portion of the TY-30B test tape recorded in step (9).

- (11) Make sure the playback Leading head Ach PCM level (TY-30B test tape) of the spectrum analyzer complies with the following specifications against the previously stored standard Leading head Ach PCM level (TY-7111D test tape). If the playback Leading head Ach PCM level does not comply with the specifications, adjust ⒶRV101 on the RF-31 board as indicated below.

If the playback level is higher than the specifications, turn ⒶRV101 counterclockwise. If the playback level is lower than the specifications, turn ⒶRV101 clockwise.

Specifications:

TY-30B test tape playback level (Leading head Ach) = (Standard level * + 0.5dB) ± 0.5dB

* Standard level = Playback level of the TY-7111D test tape ± correction value (See the correction value table provided with the TY-7111D test tape for the correction value you should use.)

Adjustment Location: ⒶRV101, RF-31 board

- (12) Repeat steps (6) to (11) until you get the playback level that complies with the specifications indicated in step (10). (Repeat the self-recording and playback.)

Caution: Be careful not to overwrite the TY-30B test tape when you perform the recording.

Leading head Bch recording current level adjustment

- (13) Hold down the DATA key and turn the SEARCH dial counterclockwise until the following message appears. Then, press SET. (Set the mode during the STOP mode.)

FL tube display message: tESt SiG A-13_157
 (flashing → OFF)

- (14) Press REC and PLAY to record the test signal specified in step (13) using the TY-30B test tape (for about 30 seconds).
- (15) Playback the portion of the TY-30B test tape recorded in step (14).
- (16) Make sure the playback Leading head Bch PCM level (TY-30B test tape) of the spectrum analyzer complies with the following specifications against the previously stored standard Leading head Bch PCM level (TY-7111D test tape). If the playback Leading head Bch PCM level does not comply with the specifications, adjust RV102 on the RF-31 board as indicated below.

If the playback level is higher than the specifications, turn RV102 counterclockwise. If the playback level is lower than the specifications, turn RV102 clockwise.

Specifications :

TY-30B test tape playback level (Leading head Bch) = (Standard level * + 0.5dB) ± 0.5dB

* Standard level = Playback level of the TY-7111D test tape ± correction value (See the correction value table provided with the TY-7111D test tape for the correction value you should use.)

Adjustment Location : RV102, RF-31 board

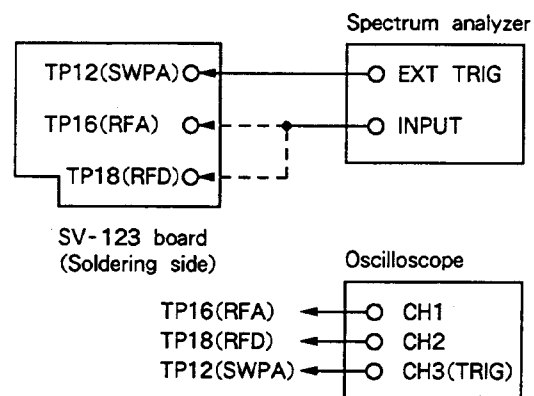
- (17) Repeat steps (14) to (16) until you get the playback level that complies with the specifications indicated in step (16). (Repeat the self-recording and playback.)
- (18) Since RV101 and RV102 affect each other, perform steps (6) to (11) after you adjust RV102 to confirm that the Ach PCM level complies with the specifications indicated in step (11).
- (19) After you adjust the Leading head PCM recording current level, be sure to adjust the "2. Leading head ATF recording current level".

2. Leading head ATF recording current level adjustment

Be sure to adjust the Leading head ATF recording current level when you adjust the "1. Leading head PCM recording current level".

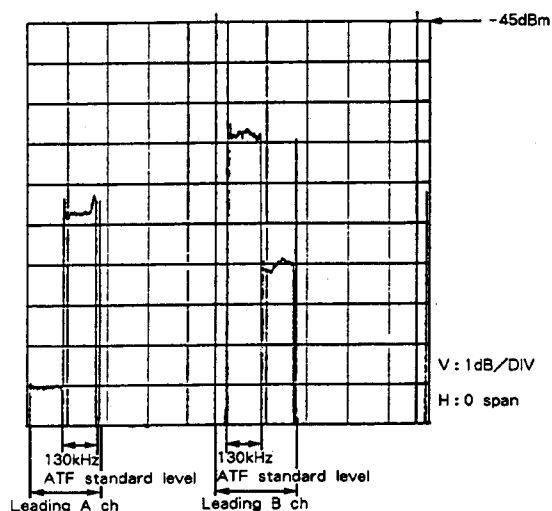
Leading head Ach ATF recording current level adjustment

- (1) Connect the spectrum analyzer to the SV-123 board as shown below.



- (2) Set the spectrum analyzer as indicated below.

Center frequency	: 130kHz
Reference level	: -45.0dBm
Frequency span	: 0Hz
Resolution Bandwidth (RBW)	: 30kHz
Video Bandwidth (VBW)	: 300kHz
Input ATT	: 10dB
SWP	: 30msec.
- (3) Load the TY-7111D test tape and play the tape.
- (4) Find the average of the RF output waveforms using the spectrum analyzer and store the data in the spectrum analyzer memory.



- (5) Press EJECT to remove the TY-7111D test tape.
- (6) Load the TY-30B test tape (blank).
- (7) Select the following TEST MENU mode.

FL tube display message : tES_t SiG A-13_157
(flashing → ON)

- (8) Press REC and PLAY to record the test signal specified in step (7) (for about 30 seconds).
- (9) Playback the portion of the TY-30B test tape recorded in step (8).
- (10) Make sure the playback Ach ATF level (TY-30B test tape) of the spectrum analyzer complies with the following specifications against the previously stored standard playback Ach ATF level (TY-7111D test tape). If the playback Ach ATF level does not comply with the specifications, adjust ⚙RV103 on the RF-31 board as indicated below.

If the playback level is higher than the specifications, turn ⚙RV103 counterclockwise.
If the playback level is lower than the specifications, turn ⚙RV103 clockwise.

Specifications :

TY-30B test tape playback level (Leading head Ach ATF) = (Standard level * - 0.5dB) ± 0.5dB
* Standard level = Playback level of the TY-7111D test tape ± correction value (See the correction value table provided with the TY-7111D test tape for the correction value you should use.)

Adjustment Location : ⚙RV103, RF-31 board

- (11) Repeat steps (6) to (10) until you get the playback level that complies with the specifications indicated in step (10). (Repeat the self-recording and playback.)

Leading head Bch ATF recording current level adjustment

- (12) Hold down the DATA key and turn the SEARCH dial counterclockwise until the following message appears. Then, press SET. (Set the mode during the STOP mode.)

FL tube display message : tES_t SiG A-157_13
(flashing → ON)

- (13) Press REC and PLAY to record the test signal specified in step (12) using the TY-30B test tape (for about 30 seconds).
- (14) Playback the portion of the TY-30B test tape recorded in step (13).
- (15) Make sure the playback Bch ATF level (TY-30B test tape) of the spectrum analyzer complies with the following specifications against the previously stored standard playback Bch ATF level (TY-7111D test tape). If the playback Bch ATF level does not comply with the specifications, adjust ⚙RV104 on the RF-31 board as indicated below.

If the playback level is higher than the specifications, turn ⚙RV104 counterclockwise.
If the playback level is lower than the specifications, turn ⚙RV104 clockwise.

Specifications :

TY-30B test tape playback level (Leading head Bch ATF) = (Standard level * - 0.5dB) ± 0.5dB
* Standard level = Playback level of the TY-7111D test tape ± correction value (See the correction value table provided with the TY-7111D test tape for the correction value you should use.)

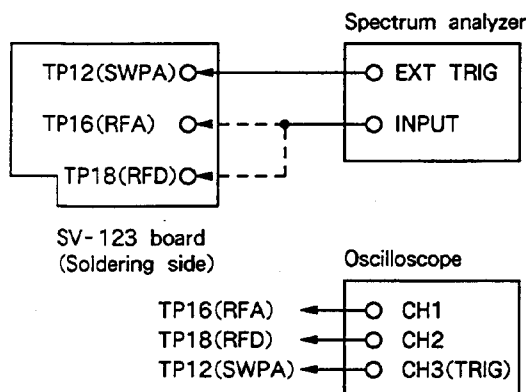
Adjustment Location : ⚙RV104, RF-31 board

- (16) Repeat steps (13) to (15) until you get the playback level that complies with the specifications indicated in step (15). (Repeat the self-recording and playback.)

3. Trailing head PCM recording current level adjustment

Trailing head Ach recording current level adjustment

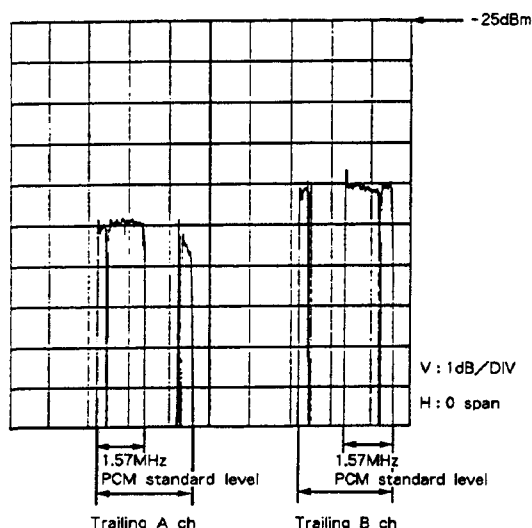
- (1) Connect the spectrum analyzer to the SV-123 board as shown below.



- (2) Set the spectrum analyzer as indicated below.

Center frequency	: 1.57MHz
Reference level	: -25dBm
Frequency span	: 0Hz
Resolution Bandwidth (RBW)	: 30kHz
Video Bandwidth (VBW)	: 300kHz
Input ATT	: 10dB
SWP	: 30msec.

- (3) Load the TY-7111D test tape and play the tape.
- (4) Find the average of the RF output waveforms using the spectrum analyzer and store the data in the spectrum analyzer memory.



- (5) Press EJECT to remove the TY-7111D test tape.
- (6) Load the TY-30B test tape (blank).
- (7) Enter (OPEN) the SERVICE MENU and select the following TEST MENU mode.

FL tube display message: tEST SiG OFF

- (8) Hold down the DATA key and turn the SEARCH dial clockwise until the following message appears. Then, press SET.

FL tube display message: tEST SiG D-157_13
(flashing → ON)

- (9) Press REC and PLAY to record the test signal specified in step (7) (for about 30 seconds).
- (10) Playback the portion of the TY-30B test tape recorded in step (9).
- (11) Make sure that the Trailing head playback Ach PCM level (TY-30B test tape) of the spectrum analyzer complies with the following specifications against the previously stored standard Trailing head Ach PCM level (TY-7111D test tape). If the Trailing head playback Ach PCM level does not comply with the specifications, adjust RV201 on the RF-31 board as indicated below.

If the playback level is higher than the specifications, turn RV201 counterclockwise. If the playback level is lower than the specifications, turn RV201 clockwise.

Specifications:

TY-30B test tape playback level (Trailing head Ach PCM) = (Standard level * + 0.5dB) ± 0.5dB
* Standard level = Playback level of the TY-7111D test tape ± correction value (See the correction value table provided with the TY-7111D test tape for the correction value you should use.)

Adjustment Location: RV201, RF-31 board

- (12) Repeat steps (6) to (11) until you get the playback level that complies with the specifications indicated in step (10). (Repeat the self-recording and playback.)

Caution: Be careful not to overwrite the TY-30B test tape when you perform the recording.

Trailing head Bch PCM recording current level adjustment

- (13) Hold down the DATA key and turn the SEARCH dial counterclockwise until the following message appears. Then, press SET. (Set the mode during the STOP mode.)
FL tube display message : tESt SiG D-13_157
(flashing → ON)

- (14) Press REC and PLAY to record the test signal specified in step (13) using the TY-30B test tape (for about 30 seconds).
- (15) Playback the portion of the TY-30B test tape recorded in step (14).
- (16) Make sure the playback Trailing head Bch PCM level (TY-30B test tape) of the spectrum analyzer complies with the following specifications against the previously stored standard Trailing head Bch PCM level (TY-7111D test tape). If the playback Trailing head Bch PCM level does not comply with the specifications, adjust RV202 on the RF-31 board as indicated below.

If the playback level is higher than the specifications, turn RV202 counterclockwise.
If the playback level is lower than the specifications, turn RV202 clockwise.

Specifications :

TY-30B test tape playback level (Trailing head Bch PCM) = (Standard level * + 0.5dB) ± 0.5dB
* Standard level = Playback level of the TY-7111D test tape ± correction value (See the correction value table provided with the TY-7111D test tape for the correction value you should use.)

Adjustment Location : RV202, RF-31 board

- (17) Repeat steps (14) to (16) until you get the playback level that complies with the specifications indicated in step (16). (Repeat the self-recording and playback.)
- (18) Since RV201 and RV202 affect each other, perform steps (6) to (11) after you adjust RV202 to make sure the Ach PCM level complies with the specifications indicated in step (11).

- (19) After you adjust the Trailing head PCM

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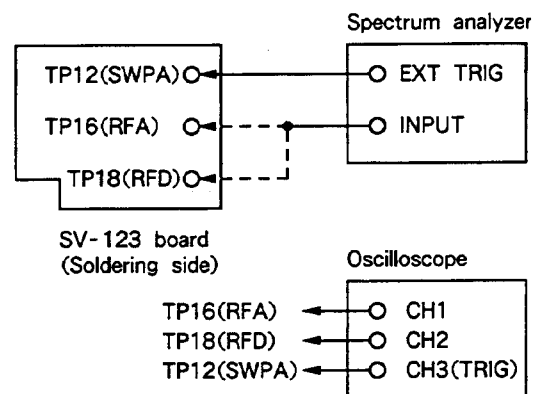
recording current level, be sure to adjust the "4. Trailing head ATF recording current level".

4. Trailing head ATF recording current level adjustment

Be sure to adjust the Trailing head ATF recording current level when you adjust the "3. Trailing head PCM recording current level".

Trailing head Ach ATF recording current level adjustment

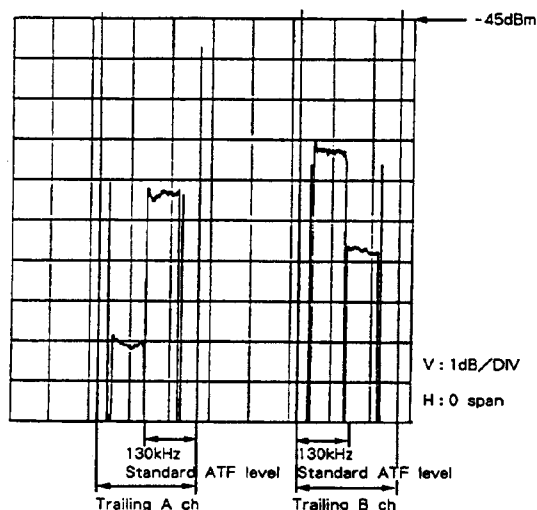
- (1) Connect the spectrum analyzer to the SV-123 board as shown below.



- (2) Set the spectrum analyzer as indicated below.

Center frequency	: 130kHz
Reference level	: -45.0dBm
Frequency span	: 0Hz
Resolution Bandwidth (RBW)	: 30kHz
Video Bandwidth (VBW)	: 300kHz
Input ATT	: 10dB
SWP	: 30msec.

- (3) Load the TY-7111D test tape and play the tape.
- (4) Find the average of the RF output waveforms using the spectrum analyzer and store the data in the spectrum analyzer memory.



- (5) Press EJECT to remove the TY-7111D test tape.
- (6) Load the TY-30B test tape (blank).
- (7) Select the following TEST MENU mode.
FL tube display message: tEst SiG D-13_157
- (8) Press REC and PLAY to record the test signal specified in step (7) (for about 30 seconds).
- (9) Playback the portion of the TY-30B test tape recorded in step (8).
- (10) Make sure the playback Trailing head Ach ATF level (TY-30B test tape) of the spectrum analyzer complies with the following specifications against the previously stored standard playback Ach ATF level (TY-7111D test tape). If the playback Trailing head Ach ATF level does not comply with the specifications, adjust ⚙RV203 on the RF-31 board as indicated below.

If the playback level is higher than the specifications, turn ⚙RV203 counterclockwise.
If the playback level is lower than the specifications, turn ⚙RV203 clockwise.

Specifications :

TY-30B test tape playback level (Trailing head Ach ATF) = (Standard level* - 0.5dB) ± 0.5dB
* Standard level = Playback level of the TY-7111D test tape ± correction value (See the correction value table provided with the TY-7111D test tape for the correction value you should use.)

Adjustment Location : ⚙RV203, RF-31 board

- (11) Repeat steps (6) to (10) until you get the playback level that complies with the specifications indicated in step (10). (Repeat the self-recording and playback.)

Trailing head Bch ATF recording current level adjustment

- (12) Hold down the DATA key and turn the SEARCH dial counterclockwise until the following message appears. Then, press SET. (Set the mode during the STOP mode.)

FL tube display message : tEst SiG D-157_13
(flashing → ON)

- (13) Press REC and PLAY to record the test signal specified in step (12) using the TY-30B test tape (for about 30 seconds).
- (14) Playback the portion of the TY-30B test tape recorded in step (13).
- (15) Make sure the playback Bch ATF level (TY-30B test tape) of the spectrum analyzer complies with the following specifications against the previously stored standard playback Bch ATF level (TY-7111D test tape). If the playback Bch ATF level does not comply with the specifications, adjust ⚙RV204 on the RF-31 board as indicated below.

If the playback level is higher than the specifications, turn ⚙RV204 counterclockwise.
If the playback level is lower than the specifications, turn ⚙RV204 clockwise.

Specifications :

TY-30B test tape playback level (Trailing head Bch ATF) = (Standard level* - 0.5dB) ± 0.5dB
* Standard level = Playback level of the TY-7111D test tape ± correction value (See the correction value table provided with the TY-7111D test tape for the correction value you should use.)

Adjustment Location : ⚙RV204, RF-31 board

- (16) Repeat steps (13) to (15) until you get the playback level that complies with the specifications indicated in step (15). (Repeat the self-recording and playback.)

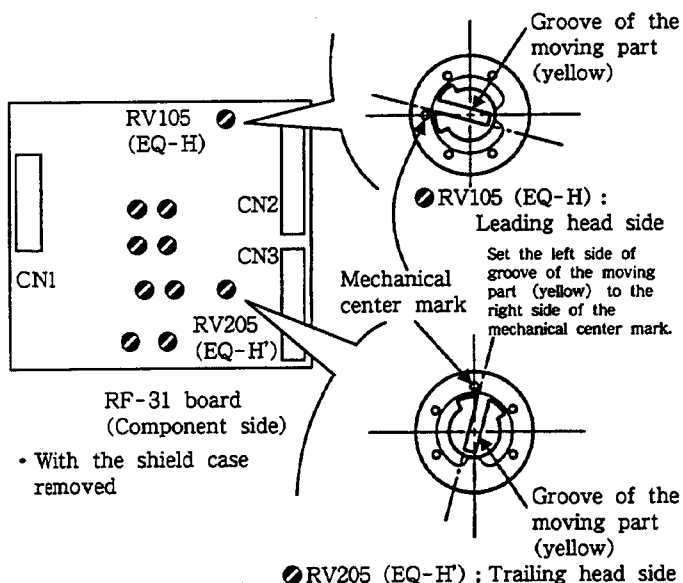
4-7. EQ-H preset (RF-31 board) and error rate check

4-7-1. EQ-H preset (RF-31 board)

The LTS voltage control volume ●RV105 (EQ-H) and ●RV205 (EQ-H') on the RF-31 board are set as follows when it is shipped. Follow the set procedure below after the replacement of RV105 or RV205.

Specifications :

Set ●RV105 (EQ-H) and ●RV205 (EQ-H') automatically as shown below (set as when it is shipped) :



4-7-2. Error Rate Check

Check the error rate after performing "5-2. Signal Processing Adjustment (SP-13 board)" (page 5-5) when you removal the mechanical deck assembly, drum assembly SP-13 board and RF-31 board. Follow the sequence below for checking : 4-40 page

Equipment and Tools Required

Audio frequency oscillator

TY-30B Test tape (8-892-358-00)

TY-7212 Test tape (8-960-081-01)

Switch and Control Settings

Front panel

REMOTE/LOCAL selection switch : LOCAL

SYNC Select switch : INT

AUDIO INPUT Select switch : ANALOG

SAMPLING FREQ Select switch : 48kHz

CH1 ANALOG INPUT level control :

Center detent position

CH2 ANALOG INPUT level control :

Center detent position

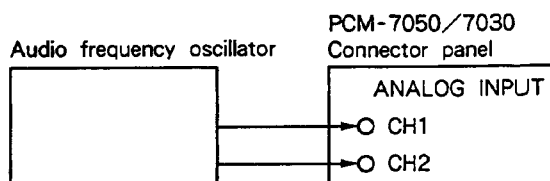
INPUT MONITOR key : ON

Recording mode setting key : ASSEMBLE

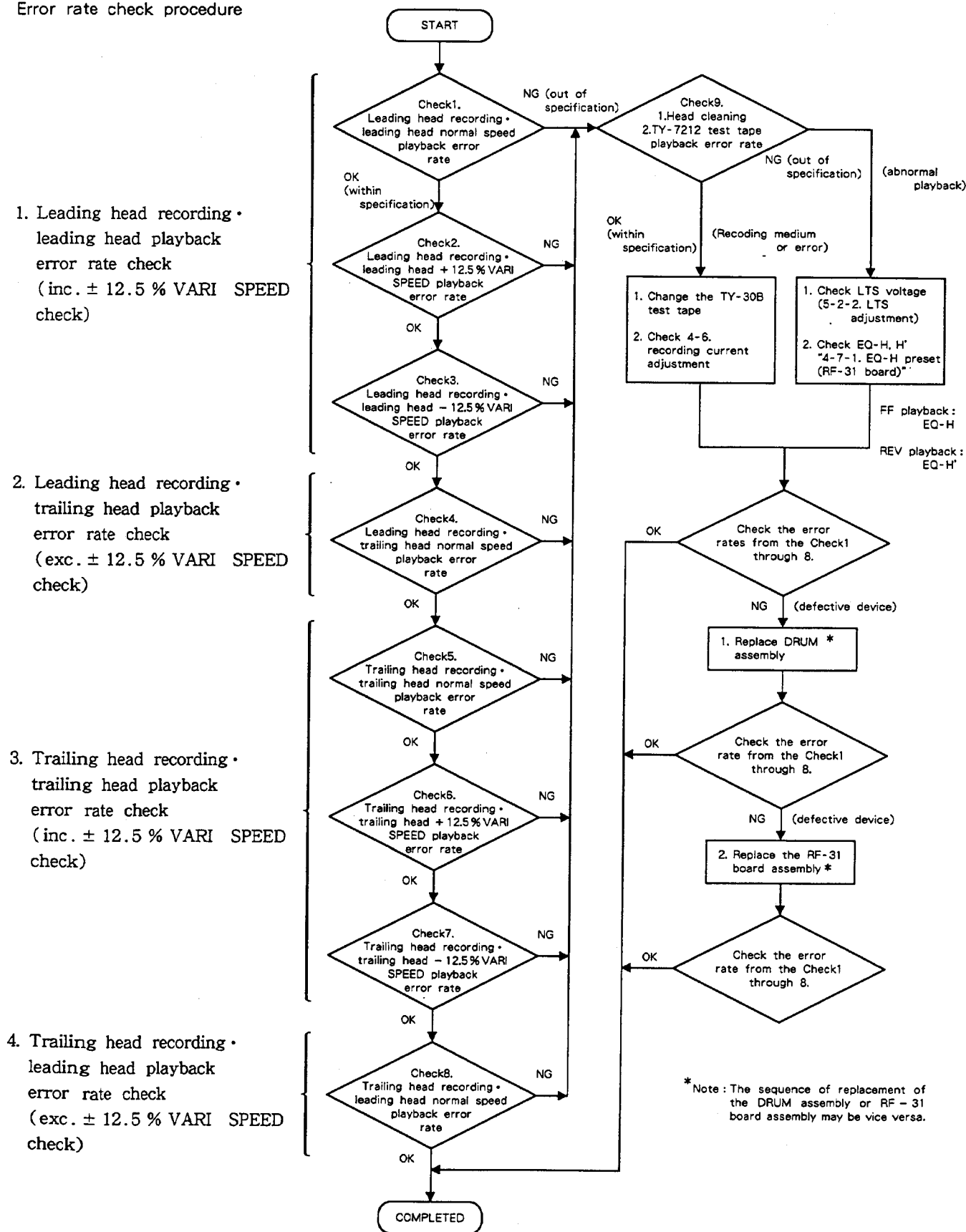
Connector panel

600-ohm ON/OFF switch : ON

Connections



Error rate check procedure



1. Leading head recording • leading head playback error rate check

(Including $\pm 12.5\%$ VARI SPEED check)

Check1. Leading head recording • leading head normal speed playback error rate

- (1) Transmit a 1kHz, standard level input signal (sine wave) to the ANALOG INPUT CH1 and CH2 connectors from the low frequency oscillator.
- (2) Adjust the CH1 and CH2 ANALOG INPUT level controls so that the level meter pointer on the front panel shows full deflection.
- (3) Set the "SYnc rEc" mode of SET-UP MENU to "oFF" to select the RAW mode (leading head recording) and press the **ASSEMBLE** key. Load the TY-30B test tape (blank) and record the signal specified in step (2) for about 2 minutes. After recording, rewind the tape to the beginning of the recorded portion.
- (4) Select the following TEST MENU mode (the following message will appear).
FL tube display message: rAtE SEL Auto
- (5) Hold down the **DATA** key and turn the **SEARCH** dial clockwise until the following message appears. Then, press **SET**.
FL tube display message: rAtE SEL A-Ab
- (6) Hold down the **MENU** key and turn the **SEARCH** dial clockwise to select the following TEST MENU mode (turn the dial until the following message appears). Then, press **SET**.
FL tube display message: Err rAtE

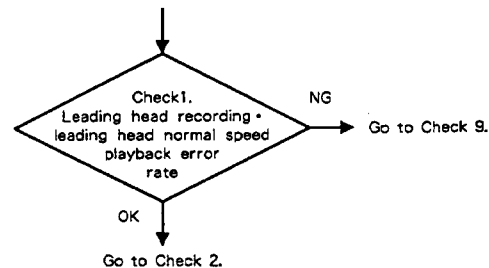
- (7) Press **PLAY** and play the TY-30B test tape.
- (8) Make sure the error rate displayed on the FL tube display 6 seconds after playback starts complies with the following specifications (the average of error rates for about 30 seconds).

Specifications :

Leading head recording • leading head normal speed playback error rate = 5×10^{-3} or less

Sample message appears on the display :

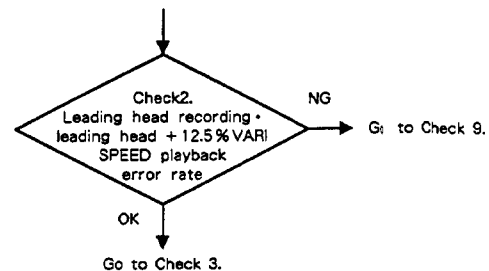
5_8-4 $\rightarrow$ 5.8×10^{-4}



- (9) Press **STOP** key.

Check2. Leading head recording • leading head + 12.5% VARI SPEED playback error rate

- (10) Press **VARI SPEED**
- (11) Hold down the **DATA** key and turn the **SEARCH** dial clockwise until the following message appears.
FL tube display message : 12 5 %
- (12) Hold down the **MENU** key and turn the **SEARCH** dial clockwise to select the following TEST MENU mode (turn the dial until the following message appears).
FL tube display message : Err rAtE
- (13) Make sure the error rate displayed on the FL tube display complies with the following specifications (the average of error rates for about 10 seconds).
Specifications :
Leading head recording • leading head + 12.5% VARI SPEED playback error rate = 9.9×10^{-3} or less



Check3. Leading head recording • leading head - 12.5% VARI SPEED playback error rate

- (14) Press **VARI SPEED** twice.
- (15) Press **DATA** and **RESET** simultaneously (resets the VARI SPEED to 0%). Then, Hold down the

DATA key and turn the **SEARCH** dial counterclockwise until the following message appears.

FL tube display message: -12 5 %

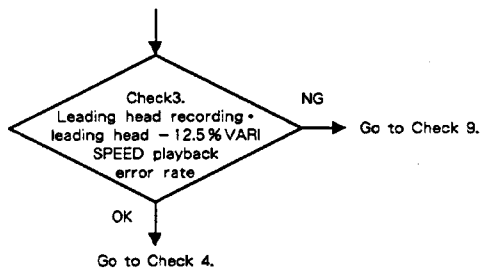
- (16) Hold down the **MENU** key and turn the **SEARCH** dial slightly clockwise until the following message appears.

FL tube display message: Err rAtE

- (17) Make sure the error rate displayed on the FL tube display complies with the following specifications (the average of error rates for about 10 seconds).

Specifications:

Leading head recording • leading head -12.5 %
VARI SPEED playback error rate = 9.9×10^{-3}
or less



- (18) Press **STOP** key.

2. Leading head recording • trailing head playback error rate check
(excluding $\pm 12.5\%$ VARI SPEED, playback check)

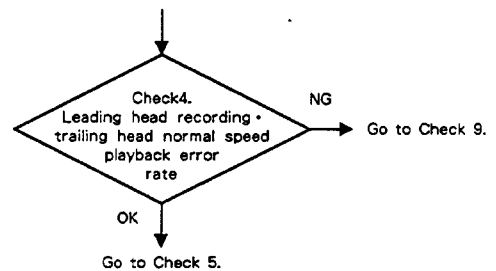
Check4. Leading head recording • trailing head normal speed playback error rate

- (19) Press the **VARI SPEED** key once (to return to the normal speed condition).
- (20) Hold down the **MENU** key and turn the **SEARCH** dial counterclockwise until the following message appears.
- FL tube display message: rAtE SEL A-Ab
- (21) Hold down the **DATA** key and turn the **SEARCH** dial counterclockwise until the following message appears. Then, press **SET**.
- FL tube display message: rAtE SEL nor
- (22) Hold down the **MENU** key and turn the **SEARCH** dial clockwise to select the following

TEST MENU mode (turn the dial until the following message appears).

FL tube display message: Err rAtE

- (23) Press **PLAY** and play the TY-30B test tape.
- (24) Make sure the error rate displayed on the FL tube display 6 seconds after playback starts complies with the following specifications (the average of error rates for about 30 seconds).
Specifications:
Leading head recording • trailing head normal speed playback error rate = 5×10^{-3} or less



- (25) Press **STOP** key.

3. Trailing head recording • trailing head playback error rate check
(Including $\pm 12.5\%$ VARI SPEED playback check)

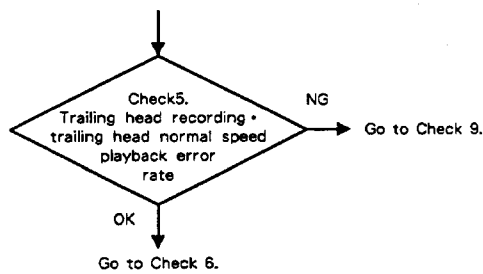
Check5. Trailing head recording • trailing head normal speed playback error rate check

- (1) After turning the POWER switch to OFF, turn the POWER switch ON (to reset)
- (2) Set the "Sync rEc" mode of SET-UP MENU to "on" to select the RMW mode (trailing head recording) and press the **ASSEMBLE** key.
Load the TY-30B test tape (blank).
Record the signal specified for about two minutes.
After recording, rewind the tape to the beginning of the recorded portion.
- (3) Select the TEST MENU mode (display indication) as indicated below.
FL tube display message: rAtE SEL Auto
- (4) Hold down the **DATA** key and turn the **SEARCH** dial clockwise until the following message appears. Then, press the **SET** key.

- FL tube display message : rAtE SEL d-Ab
- (5) While pressing the **MENU** key, turn the **SEARCH** dial clockwise to select the following TEST MENU (display).

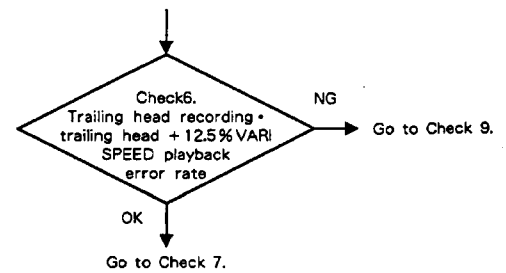
FL tube display message : Err rAtE

- (6) Press the **PLAY** key and play the test tape.
- (7) After playing for 6 seconds confirm that the error rate conforms to the following specifications (the average error rate for about 30 seconds).
Specifications : Trailing head recording/trailing head normal speed playback error rate = 5×10^{-3} or less.



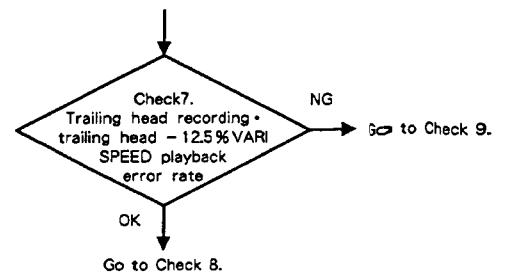
Check 6. Trailing head recording • trailing head + 12.5 % VARI SPEED playback error rate

- (8) Press **VARI SPEED** key.
- (9) Hold down the **DATA** key and turn the **SEARCH** dial clockwise until the following message appears.
FL tube display message : 12 5 %
- (10) Hold down the **MENU** key and turn the **SEARCH** dial clockwise to select the following TEST MENU mode (turn the dial until the following message appears).
FL tube display message : Err rAtE
- (11) Make sure the error rate displayed on the FL tube display complies with the following specifications (the average of error rates for about 10 seconds).
Specifications :
Trailing head recording • trailing head + 12.5 % VARI SPEED playback error rate = 9.9×10^{-3} or less



Check 7. Trailing head recording • trailing head - 12.5 % VARI SPEED playback error rate

- (12) Press **VARI SPEED** twice.
- (13) Press **DATA** and **RESET** simultaneously (resets the VARI SPEED to 0%). Then, Hold down the **DATA** key and turn the **SEARCH** dial counterclockwise until the following message appears.
FL tube display message : -12 5 %
- (14) Hold down the **MENU** key and turn the **SEARCH** dial slightly clockwise until the following message appears.
FL tube display message : Err rAtE
- (15) Make sure the error rate displayed on the FL tube display complies with the following specifications (the average of error rates for about 10 seconds).
Specifications :
Trailing head recording • trailing head - 12.5 % VARI SPEED playback error rate = 9.9×10^{-3} or less
- (16) Press the **STOP** key.



4. Trailing head recording • leading head playback error rate check

(Excluding $\pm 12.5\%$ VARI SPEED check)

Check 8. Trailing head recording • leading head normal speed playback error rate

(17) Press the **VARI SPEED** key once (to return to the normal speed condition).

(18) Hold down the **MENU** key and turn the **SEARCH** dial clockwise until the following message appears.

FL tube display message: rAtE SEL d-Ab

(19) Hold down the **DATA** key and turn the **SEARCH** dial counterclockwise until the following message appears. Then, press **SET**.

FL tube display message: rAtE SEL A-Ab

(20) While pressing the **MENU** key, turn the **SEARCH** dial clockwise to select the following TEST MENU (display).

FL display: Err rAtE

(21) Press the **PLAY** key and play the test tape.

(22) After playing for 6 seconds confirm that the error rate conforms to the following specifications (the average error rate for about 30 seconds).

Specifications:

Trailing head recording • leading head normal speed playback error rate = 5×10^{-3} or less.

(23) Press the **STOP** key.

(24) Press the **EJECT** key and remove the TY-30B test tape.

Check 9. Head cleaning and TY-7212 test tape playback error rate

In case that the error rates from the Check 1. through 8. do not comply with the specifications, perform head cleaning by using a cleaning cassette tape (See page 3-1, "3-1. Cleaning") and playback the TY-7212 error rate test tape.

If the error rate after playback the TY-7212 test tape does:

(1) comply with the specifications, perform the following ① or ② and check the error rates from the Check 1. through 8.

① Change the TY-30B test tape.

② Perform "4-6. Recording current level adjustment" again, or

(2) not comply with the specification, then, perform the following ① or ② and check the error rates from the Check 1. through 8.

① Review the instructions in 5-2-2. Standard level of LTS adjustment (SP-13 board) and perform readjustment if the level is out of standard.

② Review the instructions in 4-7-1. adjustment position of $\odot$ RV105, $\odot$ RV205 of EQ-H preset (RF-31 board) and perform readjustment if the level is out of standard.

Leading head playback: $\odot$ RV105 (EQ-H)

Trailing head playback: $\odot$ RV205 (EQ-H')

(3) not comply with the specification even the above (1), (2) are performed, then, change the drum assembly and check the error rates from the Check 1. through 8.

(4) not comply with the specification even the above (3) is performed, change the RF-31 board assembly and check the error rates from the Check 1. through 8.

Note: (3) and (4) specified above should be performed vice versa if only the RF board assembly is replaced before the error rate check.

Precautions on checking

1) In 1. Leading head recording • leading head playback error rate check:

• The error rates in the Check 1. and 2. are O.K. and NG in the Check 3.

• The error rates in the Check 1. and 3. are O.K. and NG in the Check 2.

2) In 3. Trailing head recording • trailing head playback error rate check:

• The error rates in the Check 5. and 6. are O.K. and NG in the Check 7.

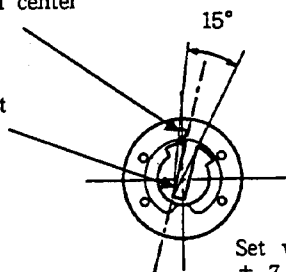
• The error rates in the Check 5. and 7. are O.K. and NG in the Check 6.

In case of above 1) and 2), execute the setting of $\odot$ RV105 (EQ-H) or $\odot$ RV205 (EQ-H') on the RF-31 board according to the range below and recheck the error rate.

$\odot$ RV105/ $\odot$ RV205 (RF-31 board)

Mechanical center
mark

Groove of
moving part
(Yellow)



Set within the range of
 $\pm 7.5^\circ$ against the
installation position of 4-
7-1. EQ-H preset.

- 1) Leading head recording • leading head playback :
 $\odot$ RV105 (EQ-H)
- 2) Trailing head recording • trailing head playback :
 $\odot$ RV205 (EQ-H')

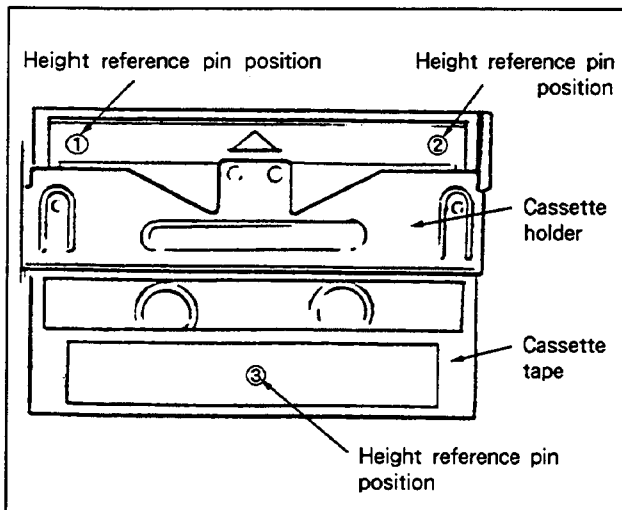
4-8. Cassette Compartment Operation Check

Equipment Required

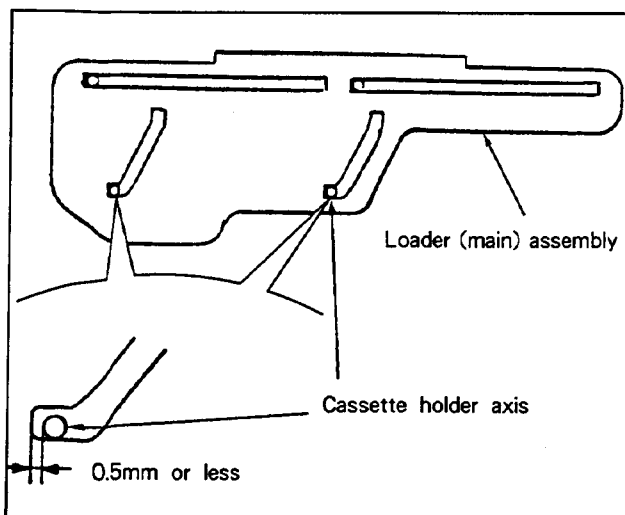
Cassette tape (any 120-minute tape sold in the market) for checking the operation

Procedure

- (1) Load the cassette tape for checking the operation.
- (2) Press down the following three points (①, ②, and ③) to make sure the cassette tape does not project from the height reference pin on the mechanical deck while the tape is inside.



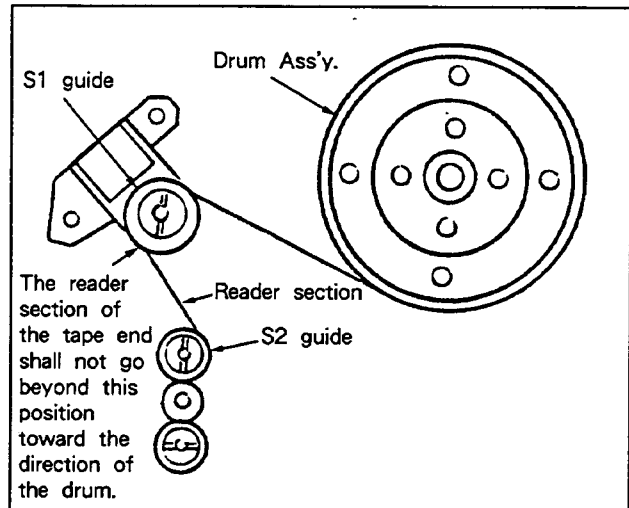
- (3) Make sure the cassette holder axis is located at the loader (main) assembly guide position on the right side of the cassette compartment, as shown in the figure below, while a cassette tape is inside.



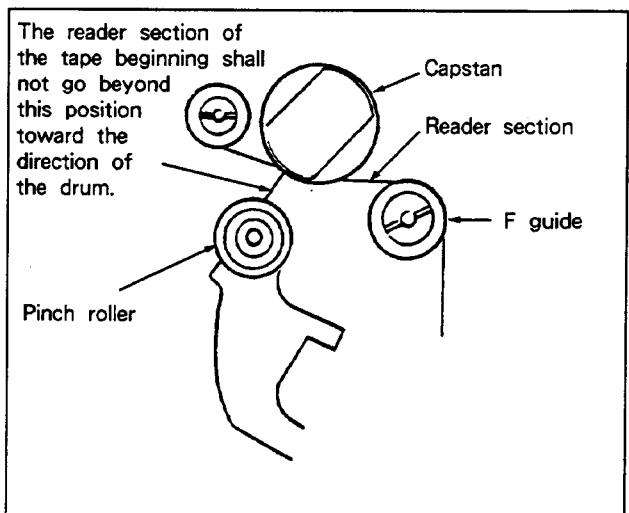
- (4) Perform FF/REW operations and make sure that the beginning and end (reader tape portion) of the cassette tape stops at the position shown in the figure below.

- (5) Press EJECT and make sure the cassette tape is ejected properly.

Tape end position check (FF operation)



Tape start position check (REW operation)



SECTION 5

Electrical Adjustments

This chapter describes the electrical adjustments required when a board is repaired or maintained.

Do the adjustments in accordance with "Electrical Adjustment Items." Before making an adjustment, the items to be adjusted beforehand must have been completed. If there are multiple adjustment item problems, check the adjustment items before and after the suspect adjustment item. This chapter describes the adjustments of the internal switches and controls required to meet the unit's specifications. Regarding the adjustments of the external switches and controls and the unit operation, refer to the Operation Manual.

Electrical Adjustment Items

5-2. Signal processing adjustment (SP-13 board)

5-2-1. RF PLL adjustment

- 1) Leading head RF PLL adjustment
- 2) Trailing head RF PLL adjustment
- 3) RF PLL fine adjustment and check



5-2-2. LTS adjustment

5-3. A/D and D/A adjustment (ADA-18 board)

5-3-1. A/D conversion level adjustment



5-3-2. D/A conversion level adjustment

5-4. Time code adjustment (Applicable if the optional TC-58 board (DABK-7030) is installed.)

Time code output level adjustment

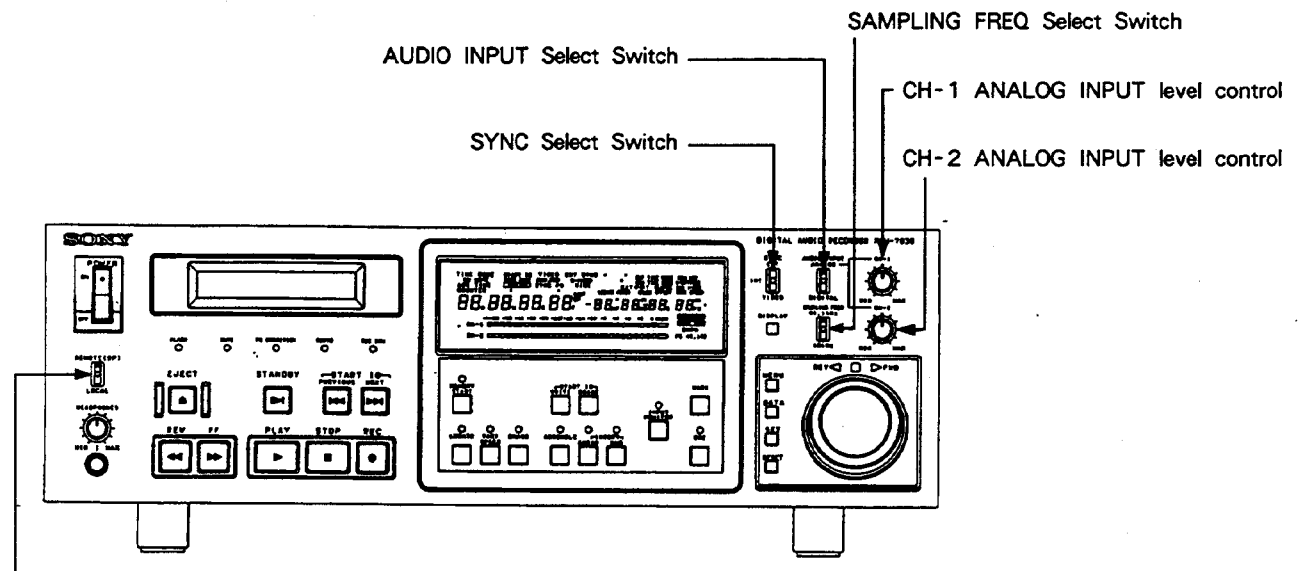
5-1. Initial Preparation

5-1-1. Equipment Required

Equipment	Minimum Specifications	Model
Oscilloscope	f : DC to 100 MHz Precision : 5 mV	—
Digital DC voltmeter	Valid digits : 4 1/2 digits or more Precision : 1 mV	—
Audio analyzer	f : 0 kHz to 30 kHz Level : +24 dBm to -70 dBm Distortion : 0.001 % S/N : 98 dB	TEKTRONIX SG505 or equivalent

5-1-2. Initial switch and control settings

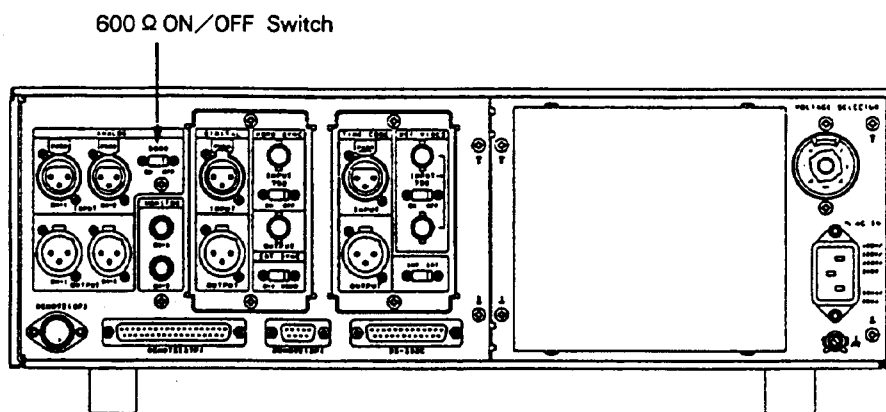
Front panel



REMOTE/LOCAL Select Switch

REMOTE/LOCAL Select Switch	; LOCAL
SYNC Select Switch	; INT
AUDIO INPUT Select Switch	; ANALOG
SAMPLING FREQ Select Switch	; 48kHz
CH1 ANALOG INPUT level control	; Click center position
CH2 ANALOG INPUT level control	; Click center position

Connector panel



600 Ω ON/OFF Switch ; ON

ADA-18 Board

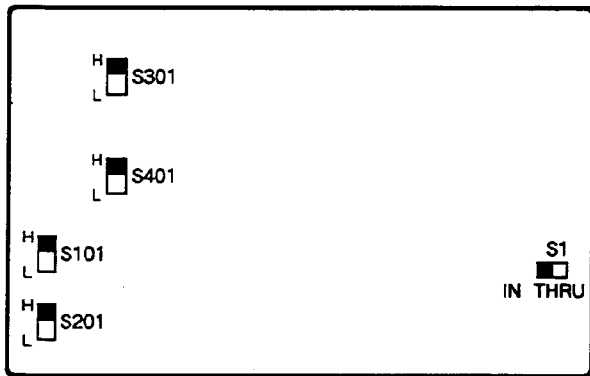
S1, IN/THRU selection switch
; IN (Factory setting.)

S101, input level setting switch
; H (Factory setting.)

S201, input level setting switch
; H (Factory setting.)

S301, input level setting switch
; H (Factory setting.)

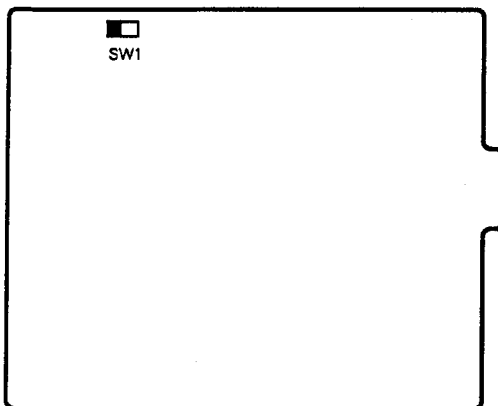
S401, input level setting switch
; H (Factory setting.)



ADA-18 BOARD
COMPONENT SIDE

RM-77 Board

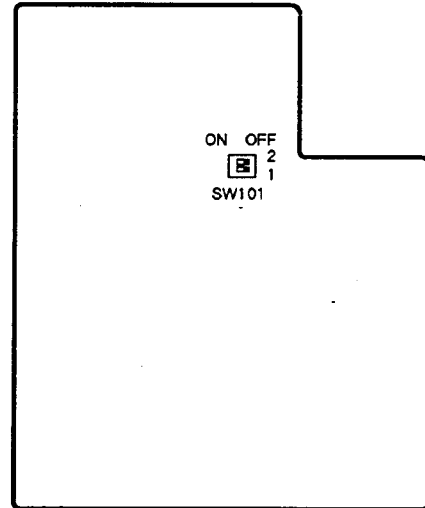
SW1, fader start/stop method selection switch
; ☒ (Factory setting.)



RM-77 Board
COMPONENT SIDE

SV-123 Board

SW101 (SW101-1, SW101-2)
Setting check switch ; All OFF.
(Factory setting.)



SV-123 BOARD
COMPONENT SIDE

SY-155B Board

SW1, CPU reset switch

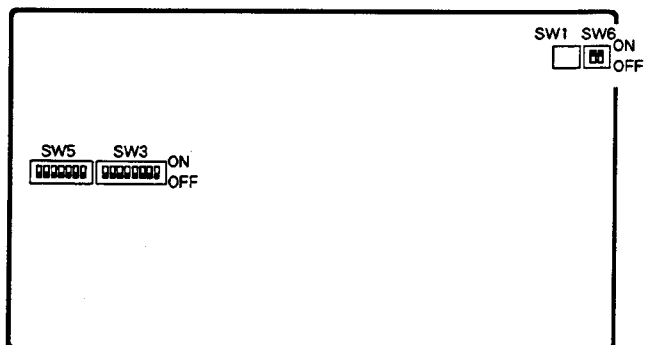
SW3 (SW3-1 to SW3-8) unused ; All OFF

SW5, time code destination setting
SW5-1, time code destination setting switch
; OFF (J, UC)
; ON (EK)

SW5-2 to SW5-7, spare switches ; OFF

SW5-8, initialize switch ; OFF

SW6, design check switches
SW6-1 and SW6-2 ; ON



SY-155B BOARD
COMPONENT SIDE

5-2. Signal Processing Adjustment (SP-13 board)

To make the adjustment, first remove the top panel and open the ADA-18 board. (Refer to the removal procedure in 2-1.)

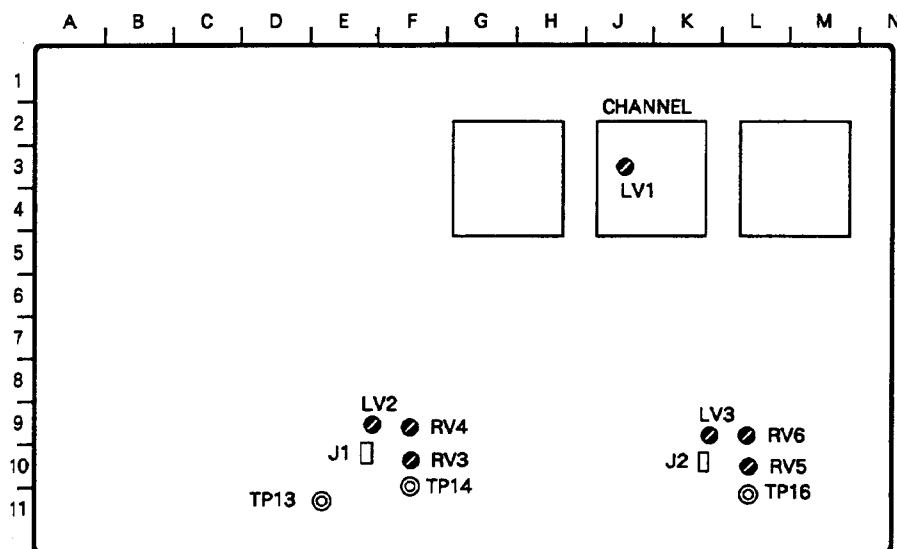
5-2-1. RF PLL adjustment

The RF PLL block generates the clock for extracting the playback data from the head. In correspondence to the head/RF amplifier characteristics, adjust the RF PLL block to obtain the best error rate. Do this adjustment when replacing the SP board or the head and RF assembly.

Initial preparation

1. Take out J1 and J2 from the SP-13 board. (See "Adjustment Location.") J1 and J2 are to be reinserted after the RF PLL adjustment.
2. Remove the shielded case's top cover in the CHANNEL block on the SP-13 board. (See "Adjustment Location.") (The top cover is to be re-installed after the RF PLL fine adjustment and check.)

Adjustment Location

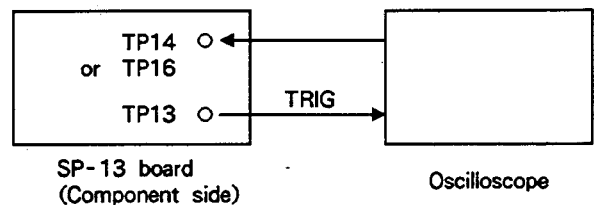


Equipment Required

Oscilloscope

Pre-recorded music cassette tape ($F_s = 48 \text{ kHz}$)

Connections

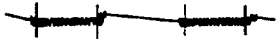
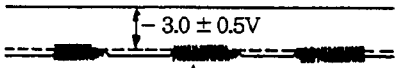


Switch and Control Settings

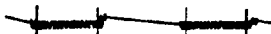
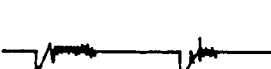
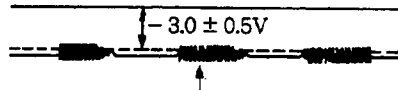
Front panel

REMOTE (9P) /LOCAL selection switch ; LOCAL
 SYNC EXT/INT/VIDEO selection switch ; INT
 SAMPLING FREQ 44.1 kHz / 48 kHz
 Selection switch ; 48 kHz
 POWER switch ; ON

1) Leading head RF PLL Adjustment

Step	Adjustment Condition	Specification	Adjustment Location (SP-13 board)
1	Insert the pre-recorded music cassette tape (Fs = 48kHz) and playback the tape. (PLAY mode)	TP14 (F, 10) output waveform OK  NG  NG  NG  TRIG : TP13 (E, 11)	⌚RV4 (F, 9) If the waveform is no good, turn ⌚RV3 slightly and then readjust ⌚RV4.
2	Same as step 1.	TP14 (F, 10) output waveform  This portion is to be flat. TRIG : TP13 (E, 11)	⌚RV3 (F, 10)
3	Same as step 2.	TP14 (F, 10) output waveform  $-3.0 \pm 0.5V$ Amplitude's center voltage where is RF. TRIG : TP13 (E, 11)	⌚LV2 (E, 9) Note : After being turned clockwise all the way, adjust ⌚LV2 so that it can be loosened within one full turn. If it is too tight, the core may be damaged. And if it is too loose, the core may come off.
4	Insert the pre-recorded music cassette tape (Fs = 48kHz) and set CUE FWD ($\times 16$ speed).	TP14 (F, 10) output waveform  This portion is to be flat. TRIG : TP13 (E, 11)	⌚RV4 (F, 9)
5	Insert the pre-recorded music cassette tape (Fs = 48kHz) and set CUE REV ($\times 16$ speed).	TP14 (F, 10) output waveform  This portion is to be flat. TRIG : TP13 (E, 11)	⌚RV4 (F, 9)
6	Insert the pre-recorded music cassette tape (Fs = 48kHz) and set CUE FWD and CUE REV ($\times 3$ speed). Repeatedly two or three times.	TP14 (F, 10) output waveform  This portion is to be flat while the tape is running. TRIG : TP13 (E, 11)	

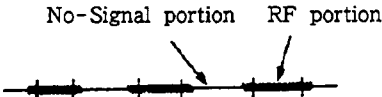
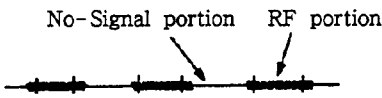
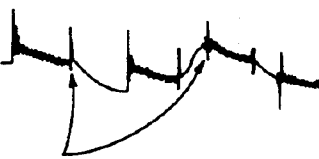
2) Trailing head RF PLL Adjustment

Step	Adjustment Condition	Specification	Adjustment Location (SP-13 board)
1	Insert the pre-recorded music cassette tape ($F_s = 48\text{kHz}$) and playback the tape. (PLAY mode)	TP16 (L, 10) output waveform OK  NG  NG  NG  TRIG : TP13 (E, 10)	⦿RV6 (L, 9) If the waveform is no good, turn ⦿RV5 slightly and then re-adjust ⦿RV6.
2	Same as step 1.	TP16 (L, 10) output waveform  This portion is to be flat. TRIG : TP13 (E, 10)	⦿RV5 (L, 10)
3	Same as step 2.	TP16 (L, 10) output waveform  Amplitude's center voltage where is RF. TRIG : TP13 (E, 10)	⦿LV3 (L, 9) Note : After being turned clockwise all the way, adjust ⦿LV3 so that it can be loosened within one full turn. If it is too tight, the core may be damaged. And if it is too loose, the core may come off.
4	Insert the pre-recorded music cassette tape ($F_s = 48\text{kHz}$) and set CUE FWD ($\times 16$ speed).	TP16 (L, 10) output waveform  This portion is to be flat. TRIG : TP13 (E, 10)	⦿RV6 (L, 9)
5	Insert the pre-recorded music cassette tape ($F_s = 48\text{kHz}$) and set CUE REV ($\times 16$ speed).	TP16 (L, 10) output waveform  This portion is to be flat. TRIG : TP13 (E, 10)	⦿RV6 (L, 9)
6	Insert the pre-recorded music cassette tape ($F_s = 48\text{kHz}$) and set CUE FWD and CUE REV ($\times 3$ speed). Repeatedly two or three times.	TP16 (L, 10) output waveform  This portion is to be flat while tape is running. TRIG : TP13 (E, 10)	

3) RF PLL Fine Adjustment and Check

Before making the adjustment, turn off the POWER switch and re-insert J1 and J2 into the SP-13 board. Then turn on the POWER switch and make the adjustment.

After completing the adjustment, turn off the POWER switch and re-install the top cover on the CHANNEL block's shielded case on the SP-13 board.

Step	Adjustment Condition	Specification	Adjustment Location (SP-13 board)
1	Insert the pre-recorded music cassette tape ($F_s = 48\text{kHz}$) and playback the tape. (PLAY mode)	TP16 (L, 10) output waveform  TRIG : TP13 (E, 10)	⚙️ LV1 (J, 2) Adjust ⚙️ LV1 so that the center of the RF portion and no signal portion becomes flat. If the center cannot be flattened, redo the adjustments from steps 3 to 6 for the back ward RF PLL adjustment described in 2). Before making the re-adjustment, shift the center voltage within the adjustment standard range stated in step 3 of the back ward RF PLL adjustment described in 2). Note : After being turned clockwise all the way, adjust ⚙️ LV1 so that it can be loosened within one full turn. If it is too tight, the core may be damaged. And if it is too loose, the core may come off.
2	Same as step 1.	TP14 (E, 10) output waveform  TRIG : TP13 (E, 10)	⚙️ LV2 (E, 9) Adjust ⚙️ LV2 so that the center of the RF portion and no signal portion becomes flat. If the center cannot be flattened, redo the adjustments from steps 3 to 6 for the forward RF PLL adjustment described in 2). Before making the re-adjustment, shift the center voltage within the adjustment standard range stated in step 3 of the forward RF PLL adjustment described in 2). Note : After being turned clockwise all the way, adjust ⚙️ LV2 so that it can be loosened within one full turn. If it is too tight, the core may be damaged. And if it is too loose, the core may come off.
3	Insert the pre-recorded music cassette tape ($F_s = 48\text{kHz}$) and set the FF and REW modes.	TP14 (F, 10) and TP16 (L, 10) output waveform OK  NG  As the voltage is high, the waveform swings to plus. TRIG : TP13 (E, 10)	

5-2-2. LTS Adjustment

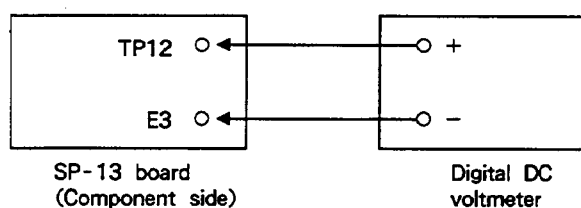
LTS ; Longitudinal Tape Speed

During vari-pitch playback, adjust the control voltage to optimize the RF equalizer's characteristics. Do this adjustment after replacing the SP board or the head and RF assembly.

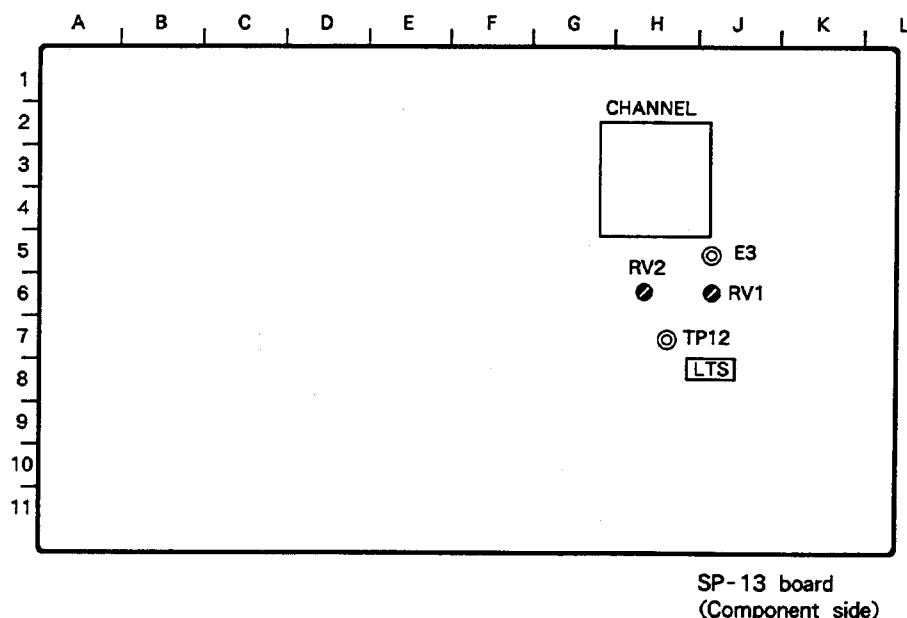
Equipment Required

Digital DC voltmeter

Connections



Adjustment Location



Switch and control settings

Front panel

POWER switch ; ON
 REMOTE (9P) / LOCAL switch ; LOCAL
 SYNC EXT/INT/VIDEO selection switch ; INT
 SAMPLING FREQ 44.1 kHz / 48 kHz switch ; 48 kHz

|||||

Step	Adjustment Condition	Specification	Adjustment Location (SP-13 board)
1	• A cassette tape has not been inserted.	DC voltage between TP12 (K,6) and E3 (K, 4) $0 \pm 0.02 \text{ V}$	●RV1 (K, 5)
2	• Vari-speed + 12.5 % A cassette tape has not been inserted.	DC voltage between TP12 (K,6) and E3 (K, 4) $+ 0.27 \pm 0.01 \text{ V}$	●RV2 (J, 2)
3	• Vari-speed + 12.5 % A cassette tape has not been inserted.	DC voltage between TP12 (K,6) and E3 (K, 4) $-0.27 \pm 0.05 \text{ V}$	

5-3. A/D and D/A Adjustment (ADA-18 board)

Remove the top panel before making the adjustment.
(Refer to the removal procedure in 2-1.)

Equipment Required

Audio analyzer

Oscilloscope

Switch, control setting

Front panel

POWER switch ; ON

SAMPLING FREQ 44.1kHz/48kHz switch ; 48kHz

AUDIO INPUT ANALOG/DIGITAL selection switch ; ANALOG

ANALOG CH1 input level control ; Click
center
position

ANALOG CH2 input level control ; Click
center
position

INPUT MONITOR key ; ON (LED
lights)

Connector panel

Analog audio signal I/O terminal

600 ohm ON/OFF switch ; ON

ADA-18 board

S101, S201, S301, and S401 ; H

5-3-1. A/D conversion level adjustment

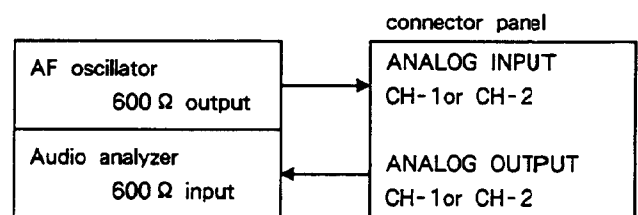
Do electrical adjustments on the A/D block on the ADA-18 board. After replacing the ADA-18 board, do this adjustment first.

Equipment Required

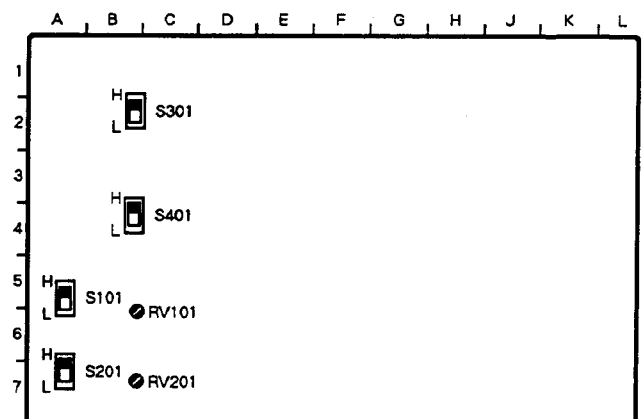
Audio analyzer

(equipment measuring audio characteristics)

Connections



Adjustment Location



ADA-18 board
(Component side)

Before making the adjustment, set the FL tube display on the front panel as follows. Regarding the procedure, refer to the Operation Manual.

FL tube display

Au-rEF (input signal level's digital display mode)

EMPH OFF (emphasis OFF mode)

Step	Adjustment Condition	Specification	Adjustment Location (ADA-18 board)
1	• Input a 1kHz, +4dBs signal into the ANALOG IN CH-1 connector.	Value of the Au-rEF CH1 (left side) on the FL tube display. -20.0 dB	●RV101 (B, 6)
2	• Input a 1kHz, +4dBs signal into the ANALOG IN CH-2 connector.	Value of the Au-rEF CH2 (right side) on the FL tube display. -20.0 dB	●RV201 (B, 7)
3	• Same as step 2. • Turn the POWER switch OFF/ON once, then set the INPUT MONITOR mode.	Only the $-\infty$ dot should be lit on the CH-1 level meter. CH-2 Au-rEF value. -20.0 dB	

5-3-2. Center potential adjustment

This adjustment applies to the ADA-18 board on the following board numbers which end in -14 and higher.

ADA-18 board

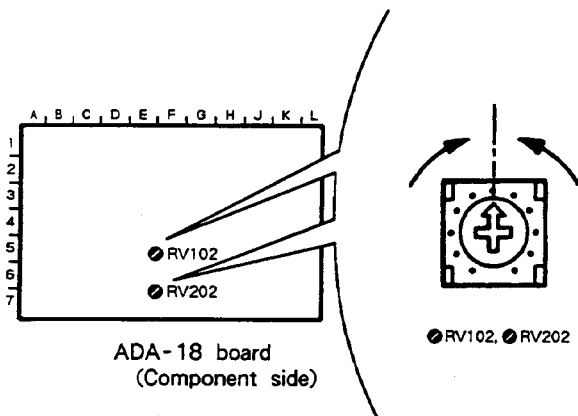
Board No : 1-637-267-14 and higher

Specification method :

The center potential should always be adjusted as figure below when ●RV102, ●RV202 are replaced.

Specification :

Set ●RV102 (E,7) and ●RV202 (E,7) to the center (as the adjustment when shipped).



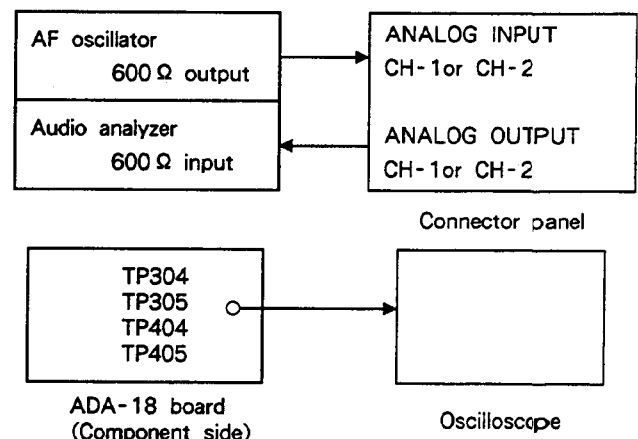
5-3-3. D/A conversion level adjustment

Do electrical adjustments on the D/A block on the ADA-18 board. After replacing the ADA-18 board, do this adjustment after completing "A/D conversion level adjustment."

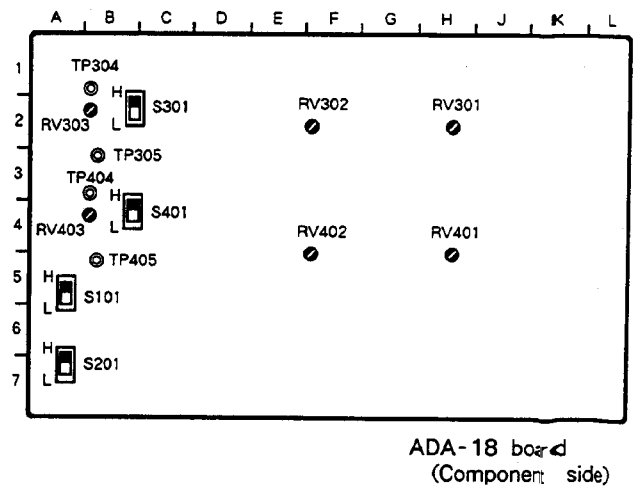
Equipment Required

Audio characteristic measuring equipment
(AF oscillator/audio analyzer) Oscilloscope

Connections



Adjustment Location



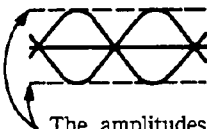
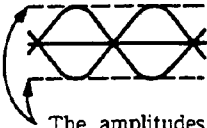
1. This adjustment applies to the ADA-18 board on the following board numbers which end in -11, -12, -13.

ADA-18 board

Board No : 1-637-267-11

1-637-267-12

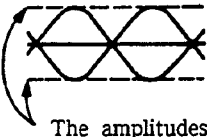
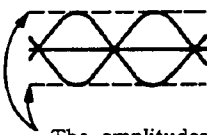
1-637-267-13

Step	Adjustment Condition	Specification	Adjustment Location (ADA-18 board)
1	• Input a 1kHz, +4dBs signal into the ANALOG IN CH-1 connector.	ANALOG OUTPUT CH1 output level + 4 dBs $\pm$ 0.1 dB	RV302 (F, 2)
2	• Same as step 1.	Adjust the ANALOG OUTPUT CH1 distortion to the minimum. The distortion should be 0.05 % or less.	RV301 (H, 2)
3	• Same as step 1.	TP304 (A, 1) to TP305 (B, 3)  The amplitudes are to be equal.	RV303 (A, 2)
4	• Input a 1kHz, +4dBs signal into the ANALOG IN CH-2 connector.	ANALOG OUTPUT CH2 output level + 4 dBs $\pm$ 0.1 dB	RV402 (E, 4)
5	• Same as step 4.	Adjust the ANALOG OUTPUT CH2 distortion to the minimum. The distortion should be 0.05 % or less.	RV401 (H, 4)
6	• Same as step 4.	TP404 (A, 3) to TP405 (B, 4)  The amplitudes are to be equal.	RV403 (A, 4)

2. This adjustment applies to the ADA-18 board on the following board numbers which end in -14 and higher.

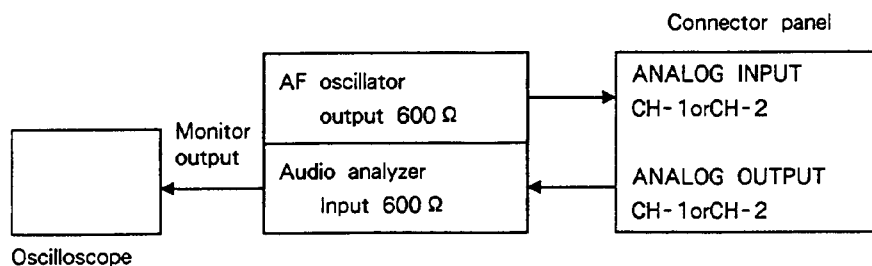
ADA-18 board

Board No : 1-637-267-14 and higher

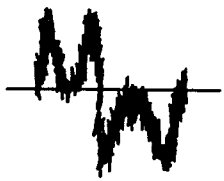
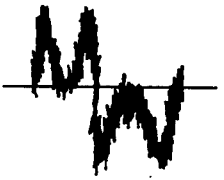
Step	Adjustment Condition	Specification	Adjustment Location (ADA-18 board)
1	• Input a 1kHz, +4dBs signal into the ANALOG IN CH-1 connector.	ANALOG OUTPUT CH1 output level $+4\text{dBs} \pm 0.1\text{dB}$	RV302 (F, 2)
2	• Same as step 1.	TP304 (A, 1) ~ TP305 (B, 3)  The amplitudes are to be equal.	RV303 (A, 2)
3	• Input a 1kHz, +4dBs signal into the ANALOG IN CH-2 connector.	ANALOG OUTPUT CH2 output level $+4\text{dBs} \pm 0.1\text{dB}$	RV402 (E, 4)
4	• Same as step 3.	TP404 (A, 3) ~ TP405 (B, 4)  The amplitudes are to be equal.	RV403 (A, 4)

Connection (step 5, 6)

Connect the oscilloscope to the monitor output of the audio analyzer.



Note : Adjustment for ●RV301, ●RV401 have to be done after heating up the body with the top board installed, then remove the top board before adjustment.

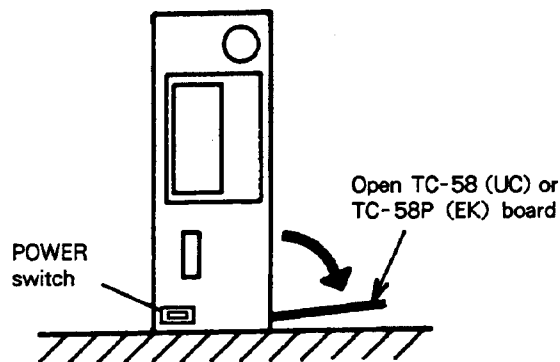
Step	Adjustment Condition	Specification	Adjustment Location (ADA-18 board)
5	• Input a 1kHz, -60dBs signal into the ANALOG IN CH-1 connector.	Satisfy ①, ② below both at the same time. ① Output level of CH1 : Between -61.0 ~ -61.5dBs ② Oscilloscope wave : sin wave   OK (sin wave) NG	●RV301 (H, 2)
6	• Input a 1kHz, -60dBs signal into the ANALOG IN CH-2 connector.	Satisfy ①, ② below both at the same time. ① Output level of CH2 : Between -61.0 ~ -61.5dBs ② Oscilloscope wave : sin wave   OK (sin wave) NG	●RV401 (H, 4)

5-4. Time Code Adjustment (With the optional TC-58 board (DABK-7030) installed.)

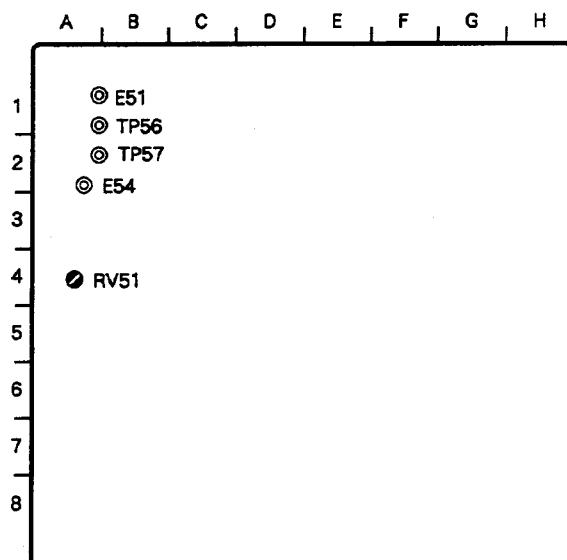
Do this adjustment if the DABK-7030 (TIME CODE OPTION) is installed on the PCM-7030/PCM-7050 or if the time code output level is to be changed.

Initial preparation

1. As shown in the figure below, lay the unit with the POWER switch on the front panel facing down.
2. Remove the bottom panel and open the TC-58 board to expose the component side. (See the figure below.) Refer to the removal procedure in 2-1.



Adjustment Location



TC-58 (UC) or
TC-58P (EK) board
(Component side)

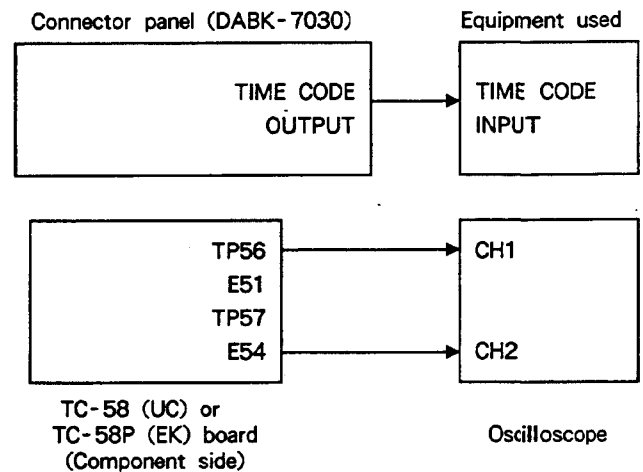
Equipment Required

Oscilloscope

Cassette tape recorded with a time code

Equipment connected to the time code output

Connections



Switch and control settings

Same as the initial settings.

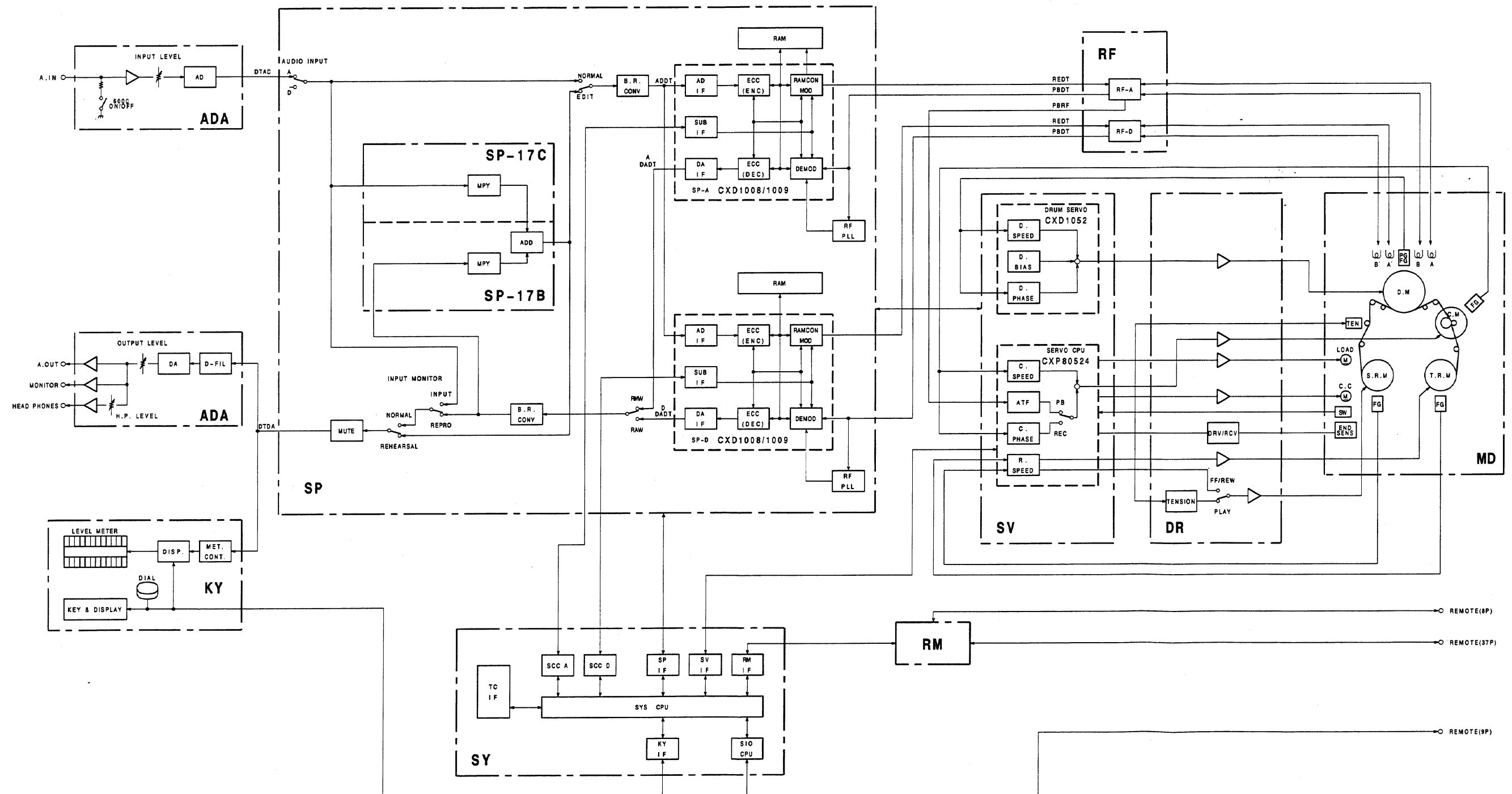
|||||

Adjustment Condition	Specification	Adjustment Location (TC-58 board)
Insert the time code-recorded cassette tape and playback the tape.(PLAY mode) • Connect the oscilloscope's CH1 and GND to TP56 (A, 1) and E51 (A, 1) respectively. • Connect the oscilloscope's CH2 and GND to TP57 (A, 1) and E54 (A, 2) respectively.	Oscilloscope CH-1 Oscilloscope CH-2 ; INVERT } Both channels : ADD mode  $A = 2.4 V_{p-p}$ • If the time code output level is to be changed, adjust ⓪RV51 so that voltage A above becomes the desired voltage.	⓪RV51 (A, 4)

OVERALL BLOCK DIAGRAM

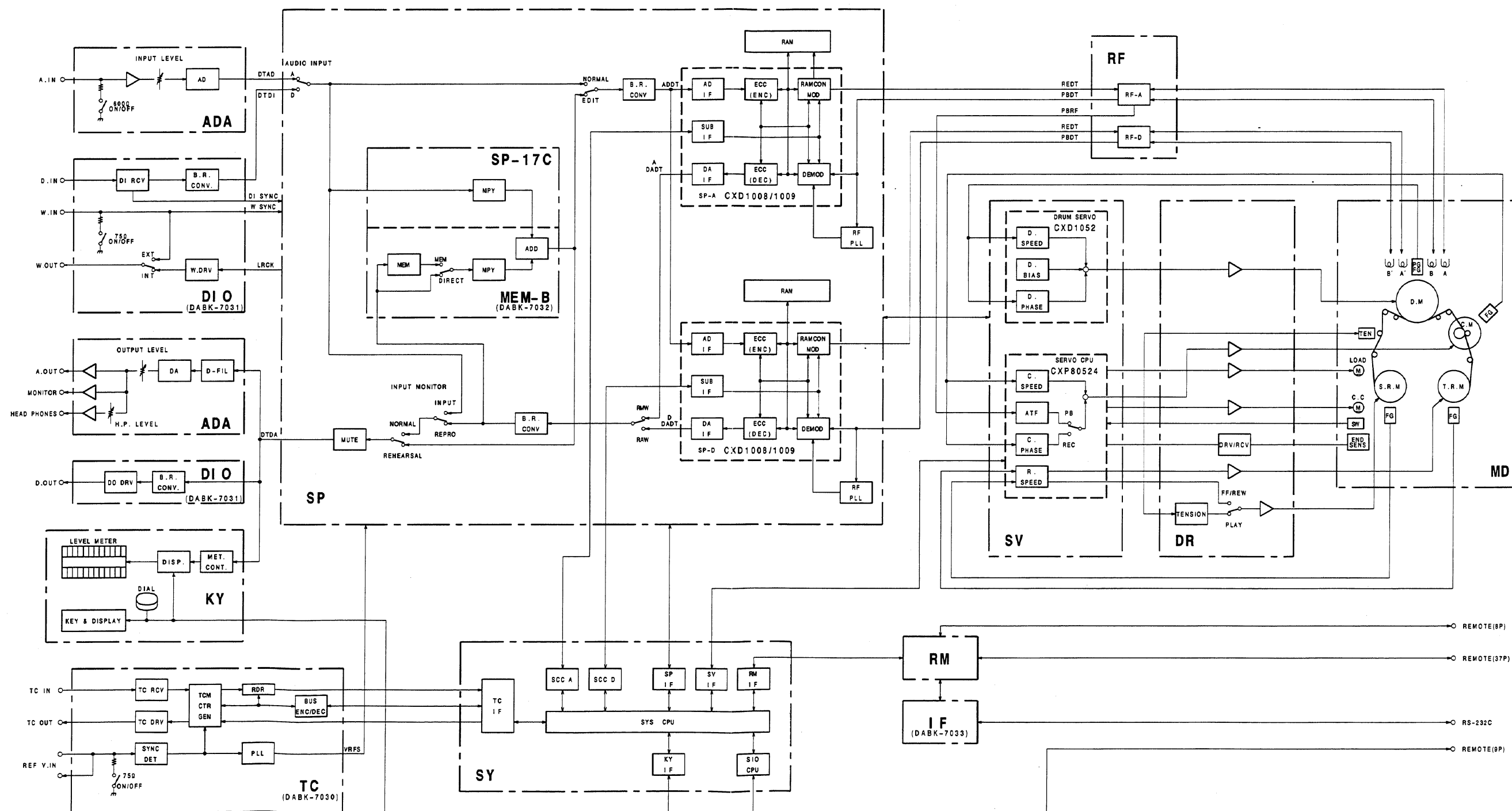
SECTION A BLOCK DIAGRAMS

OVERALL(without option)



OVERALL
(without option)
PCM-7030

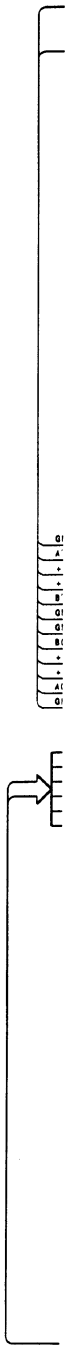
OVERALL(with all the options)



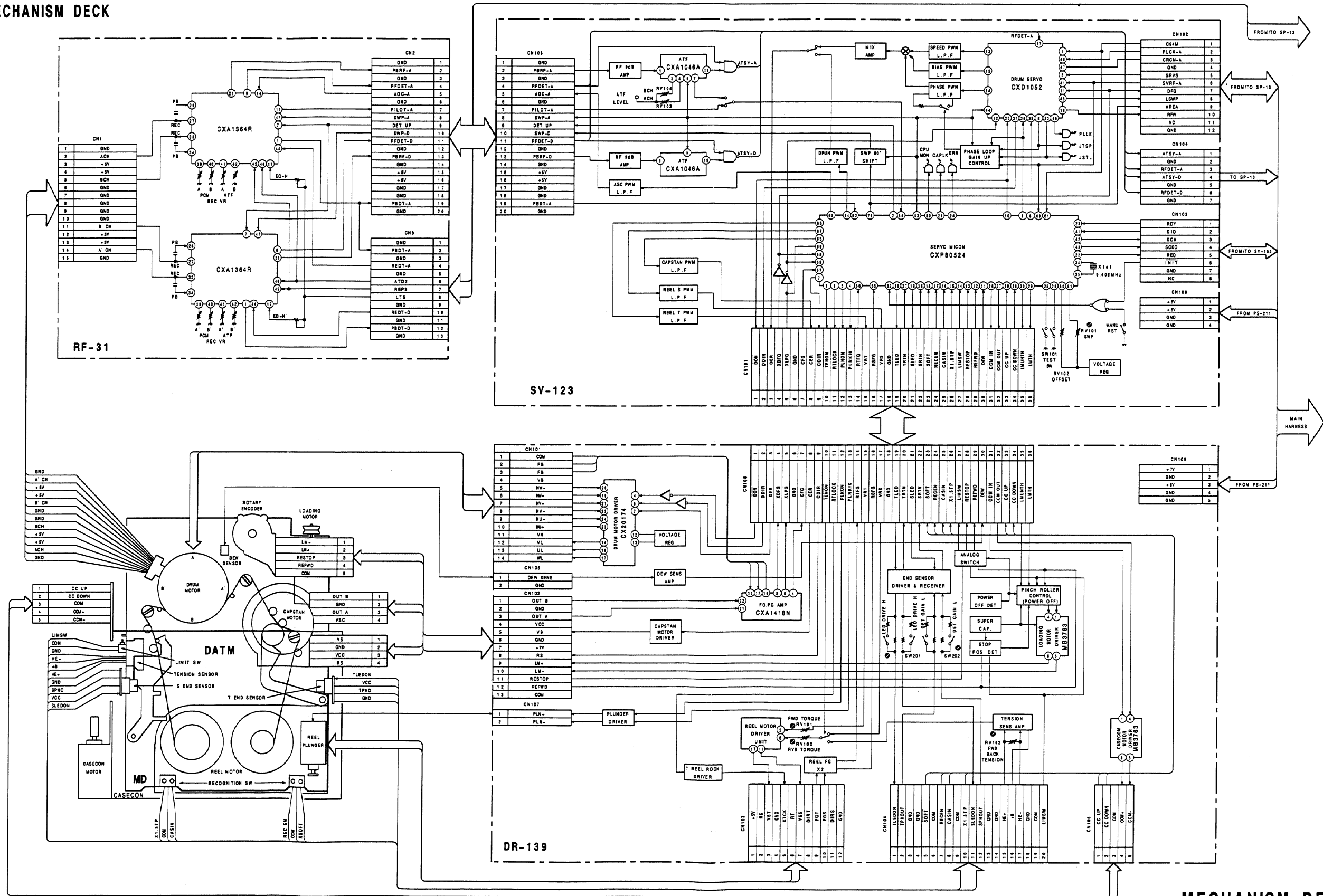
OVERALL

(with all the options)
PCM-7030

MECHAN



MECHANISM DECK

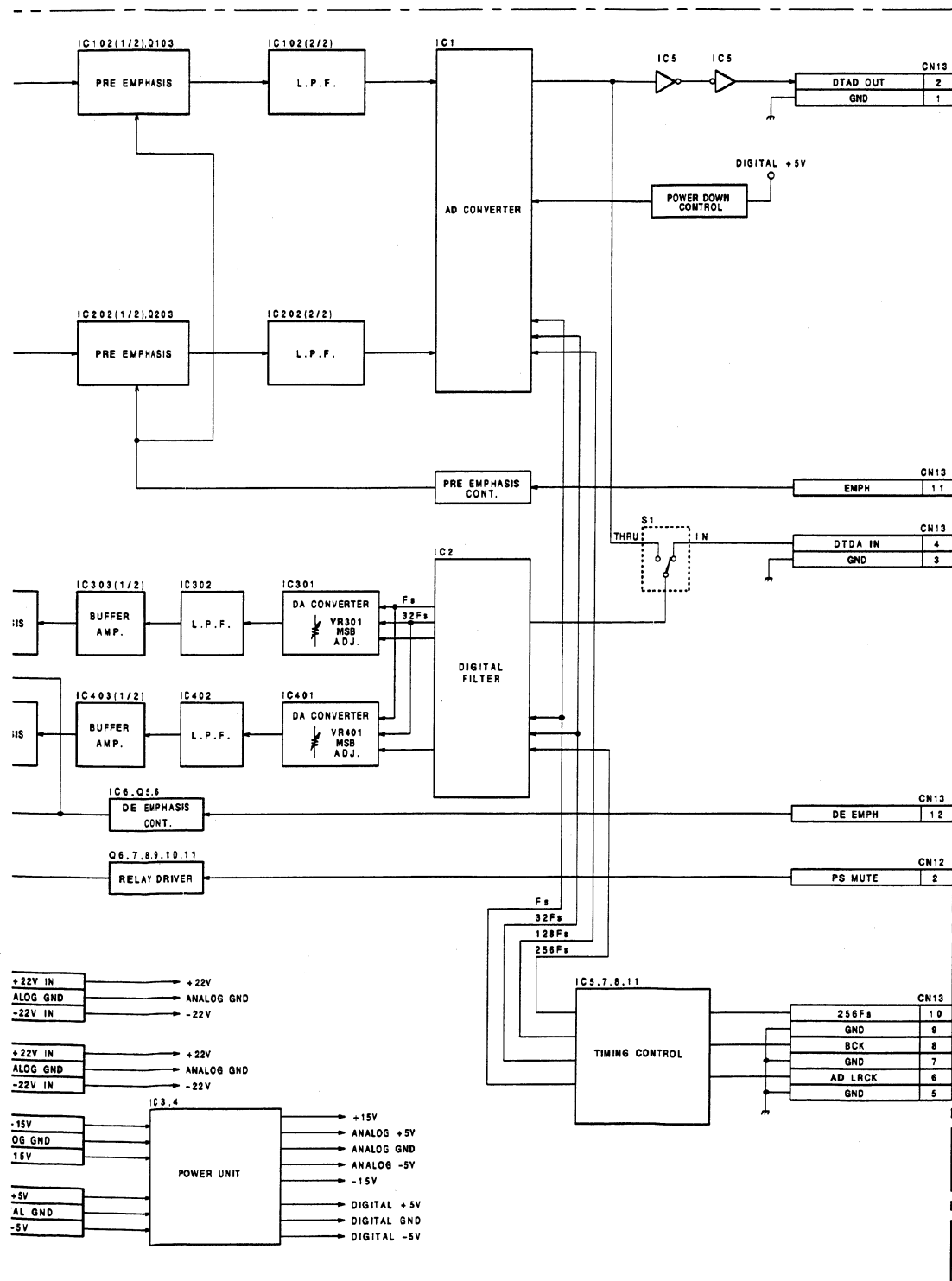


(A/D, D/A CONVERTER)
ADA-18 BLOCK DIAGRAM

Serial No.	UC 20001 to 20115
	EK 50001 to 50380



A - 10 (a)



ADA-18
PCM-7030

ADA-18 Board

The ADA-18 board consists of the A/D converter, D/A converter of two channels, and timing control block.

The A/D converter converts the analog signal to the digital signal of two channels and output the digital signal to the SP-13 board.

The D/A converter converts the digital signal of two channels transmitted from the SP-13 board to the analog signal.

1. A/D converter

A/D converter consists of -20dBs/+4dBs input level change circuit, LINE IN AMP (IC101/IC201), MUTE (Q101, 102/Q201, 202), PRE-EMPHASIS (IC102, Q103/IC102, Q203), and L.P.F.(IC102, IC202). The circuit offset (OFFSET CALIBRATION) is canceled automatically when the power turns on. The input level can be set to -20dBs or +4dBs by INPUT ATT SWITCH.(S101/S201)

2. D/A converter

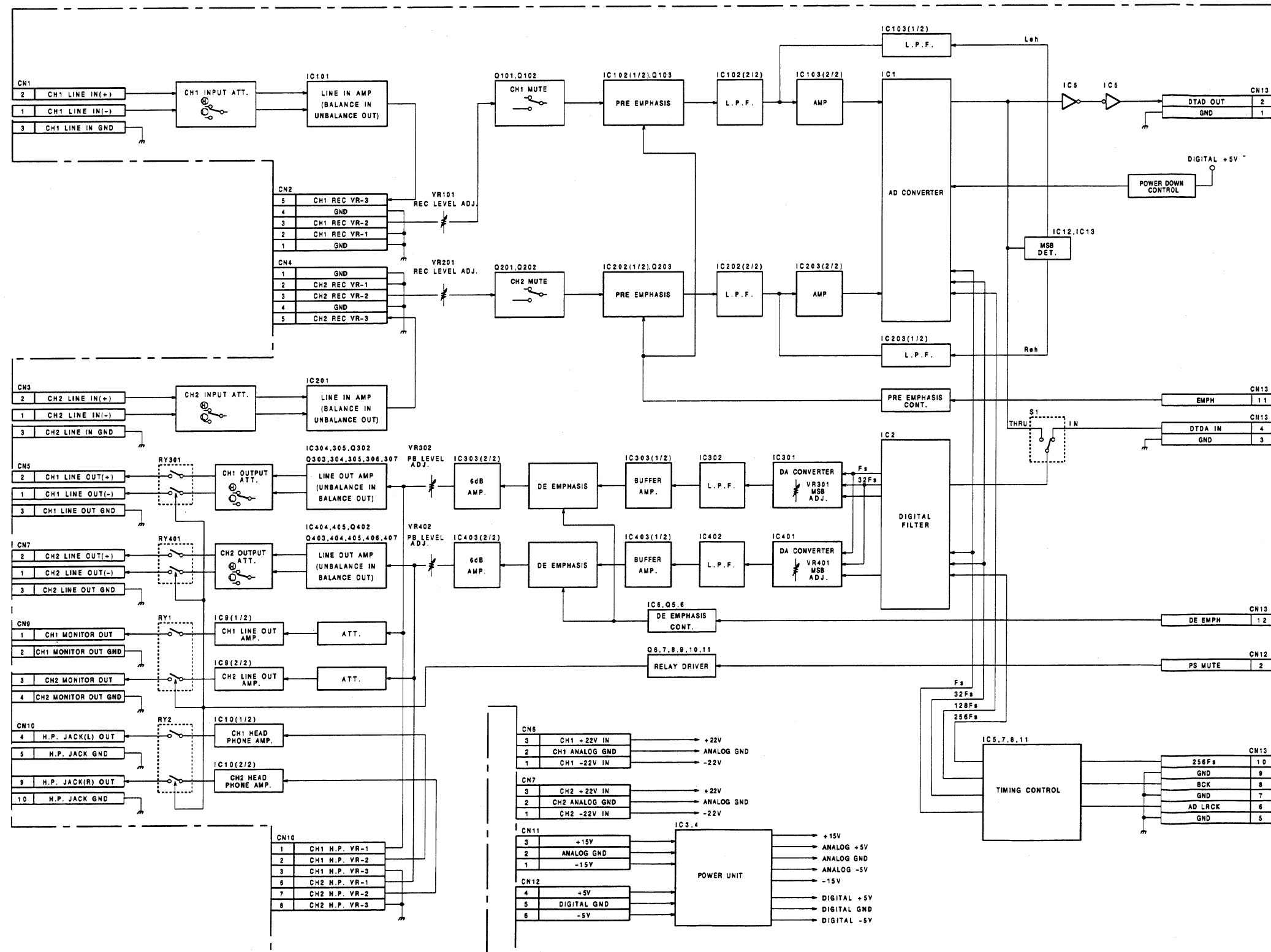
D/A converter consists of the digital filter (IC2), D/A converter (IC301,IC401), L.P.F.(IC301/IC402), DE-EMPHASIS, LINE OUT AMP (IC304, 305, Q302-307 / IC404, 405, Q402-407), -20dBs/+4dBs output level change circuit, MONITOR OUT AMP (IC9) and HEADPHONE AMP (IC10). It can make the cut off characteristic of the L.P.F. moderate to make the sampling frequency eight times by using the digital filter. This improves a linear phase characteristic in the audible frequency range. The output level can be set to -20dBs or +4dBs by OUTPUT ATT SWITCH (S301, S401).

3. Timing control division (IC5, 7, 8, 11)

It regenerates the each timing signal (AD LRCK, BCK, 256Fs) transmitted from the SP-13 board into timing signals (Fs, 32Fs, 128Fs, 256Fs) which are required for A/D and D/A conversion.

ADA-18 BOARD
REC Audio,A/D Converter
PB Audio,D/A Converter

Serial No. UC 20116 and higher
EK 50381 and higher



A-9(b)

A-10(b)

ADA-18
PCM-7030

ADA-18 Board

The ADA-18 board consists of the A/D converter, D/A converter of two channels, and timing control block.

The A/D converter converts the analog signal to the digital signal of two channels and output the digital signal to the SP-13 board.

The D/A converter converts the digital signal of two channels transmitted from the SP-13 board to the analog signal.

1. A/D converter

A/D converter consists of -20dBs/+4dBs input level change circuit, LINE IN AMP (IC101/IC201), MUTE (Q101, 102/Q201, 202), PRE-EMPHASIS (IC102, Q103/IC102, Q203), and L.P.F.(IC102, IC202). The circuit offset (OFFSET CALIBRATION) is canceled automatically when the power turns on. The input level can be set to -20dBs or +4dBs by INPUT ATT SWITCH.(S101/S201)

2. D/A converter

D/A converter consists of the digital filter (IC2), D/A converter (IC301,IC401), L.P.F.(IC301/IC402), DE-EMPHASIS, LINE OUT AMP (IC304, 305, Q302-307 / IC404, 405, Q402-407), -20dBs/+4dBs output level change circuit, MONITOR OUT AMP (IC9) and HEADPHONE AMP (IC10). It can make the cut off characteristic of the L.P.F. moderate to make the sampling frequency eight times by using the digital filter. This improves a linear phase characteristic in the audible frequency range. The output level can be set to -20dBs or +4dBs by OUTPUT ATT SWITCH (S301, S401).

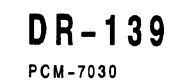
3. Timing control division (IC5, 7, 8, 11)

It regenerates the each timing signal (AD LRCK, BCK, 256Fs) transmitted from the SP-13 board into timing signals (Fs, 32Fs, 128Fs, 256Fs) which are required for A/D and D/A conversion.

(MOTOR DRIVE, SENSOR)
DR-139 BLOCK DIAGRAM

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input 1



DR-139 Board

The hardware of DR-139 board consists of the following blocks:

1. Drum FG, PG amplifier and driver (IC101, 102)

Drum FG and PG are a system that forms a magnetizing pattern on the drum and detects the alteration of a magnetic field with a fixed printed coil. Drum PG is converted to TTL LEVEL through a comparator after passing through the head amplifier, integrator and AGC AMP in the FG, PG AMP IC (IC101). Drum FG is converted to TTL LEVEL through a comparator after passing through the head amplifier and the level clamper in the FG, PG AMP IC (IC101).

Three phase brushless motors is used as the drum motor. The drum servo error voltage (DER) from the SV-123 board will be into the control amplifier after passing through the input amplifier in the DRUM MOTOR DRIVER (IC102).

The difference between each phase detected by the peak detector and the output amplitude is taken and receives V-I conversion after passing through L.P.F. which is to stabilize the amplitude control loop, and is input to VCA. On the other hand, the drum rotation phase information input as control signals of VCA for each phase after detected with hall elements (HU-, HU+, HV-, HV+, HW-, HW+). VCA output is connected to the motor coil through the I-V converter and power amplifier, and VCA control signals rotate the motor by the current into the coil that generates a rotating magnetic field. The voltage regulator (Q103, Q104) reduce the power loss of IC102 by providing it with driving voltage according to the output amplitude.

2. Capstan FG amplifier and driver (IC101, 103, Q105)

The capstan FG is a system that forms a magnetizing pattern on the rotor and detects the alteration of a magnetic field with fixed magnetic reluctance elements. The differential output signal (OUTA, OUTB) is input to the comparator in FG, PG AMP IC (IC101)

and is converted to TTL LEVEL (CFG). Three phase brushless motor is used as the capstan motor. The driver is in the board unified with the capstan motor, however, most of the power loss is borne by Q105 on this board.

3. Reel FG forming circuit and driver (IC104-107)

The reel FG uses an optical system and is detected in the reel motor and is converted to TTL LEVEL. This FG are detected by differential circuit after passing HPF and the Schmitt circuit (IC106) and is transmitted to the servo micro-computer (CXP-80524 on the SV-123 board). On the other hand, T-side reel error signal (VRT) from the SV-123 board, pass through the attenuator for the FWD torque adjustment and input to the power amplifier (IC105). This power amplifier has 6dB gain. Three-phase brushless motors are used as reel motors. The driver is in the board in the reel motor, however, most of the power loss is borne by Q105. S-side reel error signal (VRS) is shifted to the output signal of the tention regulator amplifier according to modes by the analog switch (IC104) and is input to IC105.

4. Tention regulator amplifier (IC103)

The positioning information of the tention regulator on the mechanical deck is detected by the hall elements and is input to the differential amplifier of IC103 (HE+, HE-). The amplified signal will be selected by the analog switch in record mode and play mode, and the tention servo loop will be formed. RV103 is for FWD tention adjustment.

5. Plunger driver (Q205-208)

The break for the reel motors shall be released by using plunger. The voltage required for kicking and holding plunger is shifted.

6. End sensor driver/receiver (IC206-208, Q209, 210)

By using end sensor driver (Q209, Q210), the square wave of 1KHz comes from servo micro-computer drive LED in the end sensor unit. The driving current value shall be shifted into two steps by using SW201. When a tape ends, the light from LED is reflected by prism in the cassette and is input into the photo transistor inside the end sensor unit.

Photo transistor output (TPH OUT, SPH OUT) enters the END sensor receiver (IC206, 207, 208), changed into TTL LEVEL by compalator then transmitted to micro computer (IC101) in the SV-123 board.

Gain of the amplifier section shall be shifted into two steps by using SW202.

7. Loading cassette compartment motor driver (IC104, 201-204, Q201, 202)

The loading motor driver (IC201) is a bidirectional driver for a loading motor. In order to avoid the transformation of a pinch roller, it includes a circuits (Q201, Q202, IC202) that return to STOP position when the power turned off during installation. The cassette compartment motor driver (IC203) is a bidirectional driver for the cassette compartment motor.

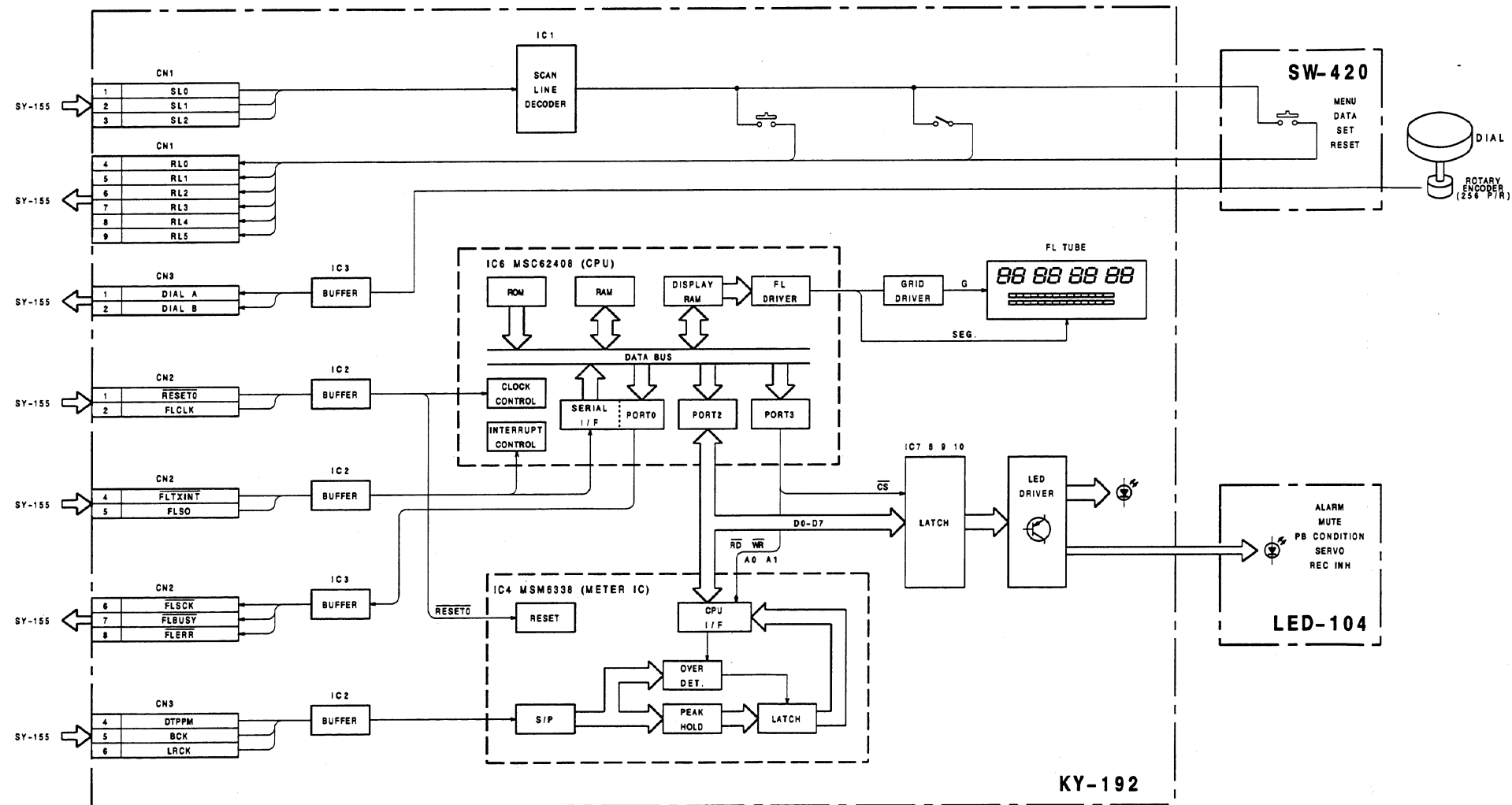
8. T-side reel lock circuit (Q203, 204)

This is to shunt service voltage of T-side reel motor and lock the motor in order to avoid the slack of the tape during loading and unloading mode.

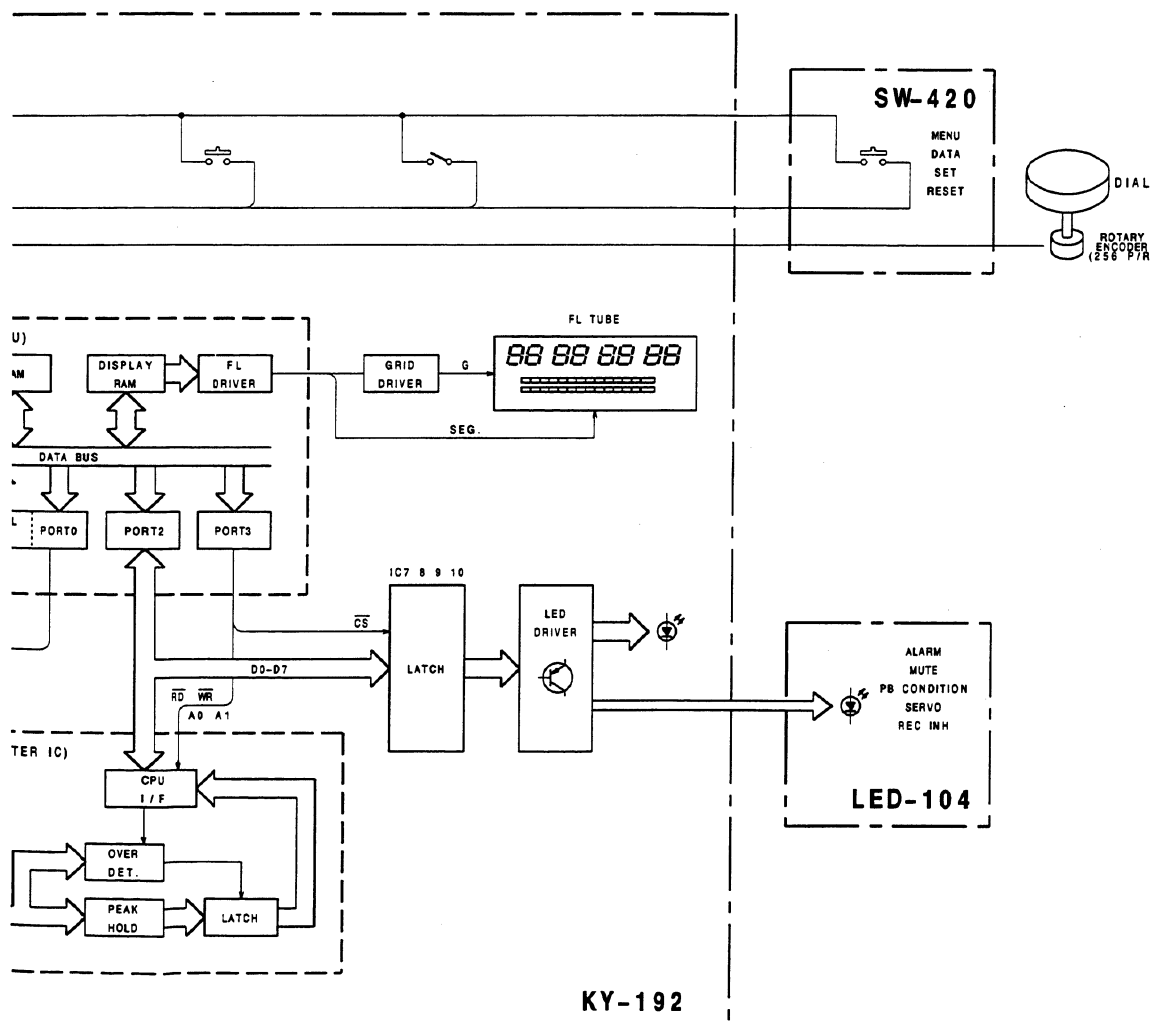
9. Dew sensor detecting circuit (IC209)

The resistance value of sensor mounted on the mechanical deck decreases when humidity is increased. It detects the change and transmits to servo micro-computer.

KY-192 BOARD/LED-104 BOARD/SW-420 BOARD
Key Board/Display



KY-192
LED-104
SW-420
PCM-7030



KY-192, LED-104 and SW-420 Boards

The KY-192 board consists of KEY and SELECTOR on the front panel scan block, and FL tube and LED display block. The METER IC (IC4) performs a holding of a peak value of 16 bit serial audio data and a detection of OVER LEVEL. CPU (IC6) is a 8bits CPU with ROM, RAM, and FL DRIVER. It display FL tube and LED according to the serial data from SY-155 and the audio peak data from the METER IC (IC4).

1. KEY, SW SCAN block

It decode (IC1) the SCAN LINE DATA (SL0, 1, 2) transmitted from ICA4 (TMP82C79) on the SY-155 board and output the RETURN LINE DATA (RL0-5) to the SY-155 board. The Key scan is performed for all keys and selectors on the front panel. Also it outputs the rotary encoder pulse data of the dial to the SY-155 board (Dial A, B) via the SW-420 board.

2. FL tube, LED display block

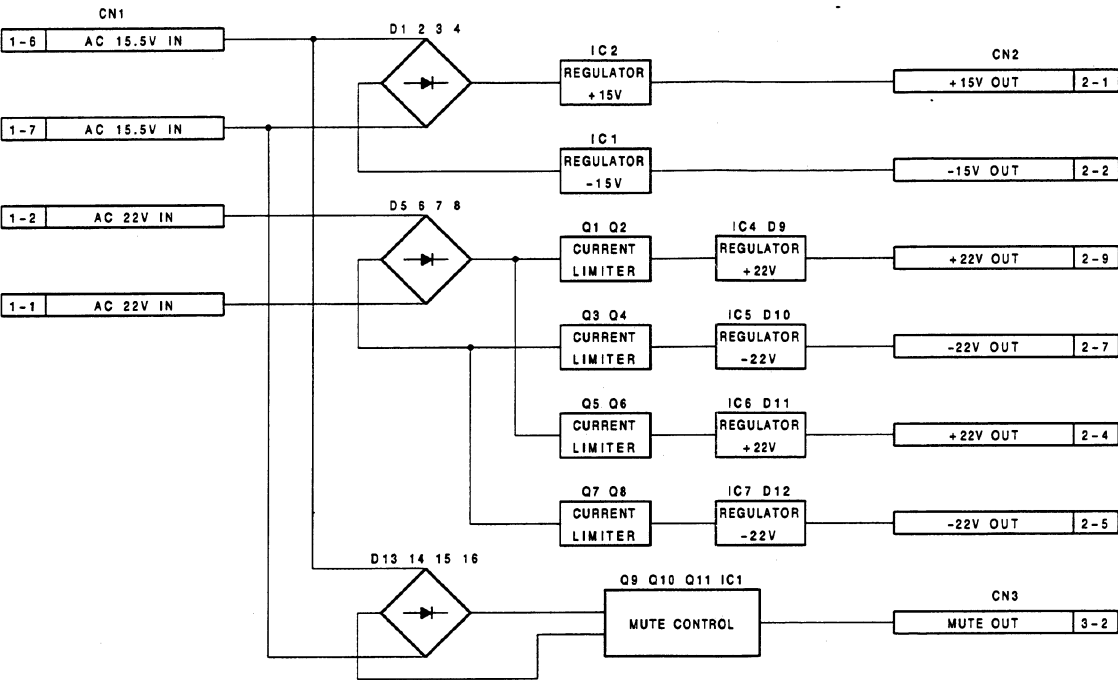
The 16bit digital audio data (DTPPM) input from the SP-13 board via the SY-155 board will be inserted into IC4 (MSM6338) together with LRCK, BCK signals. In this division, the peak value is held after the S/P conversion and the absolute value conversion. The detection of over level is performed simultaneously according to the over level value and over level sensitivity. The IC6 (MSC62408) executes serial communication with ICF2, MAIN CPU (UPD70216 (V50)) on the SY-155 board and performs lighting, and flashing of FL tube and LED as well as the METER display mode (ex. PEAK HOLD MODE, HOLD TIME).

It reads the peak data from the METER IC (IC4) and converts it to the segments data according to the parameter specified from the main CPU (V50).

KY-192
LED-104
SW-420

PCM-7030

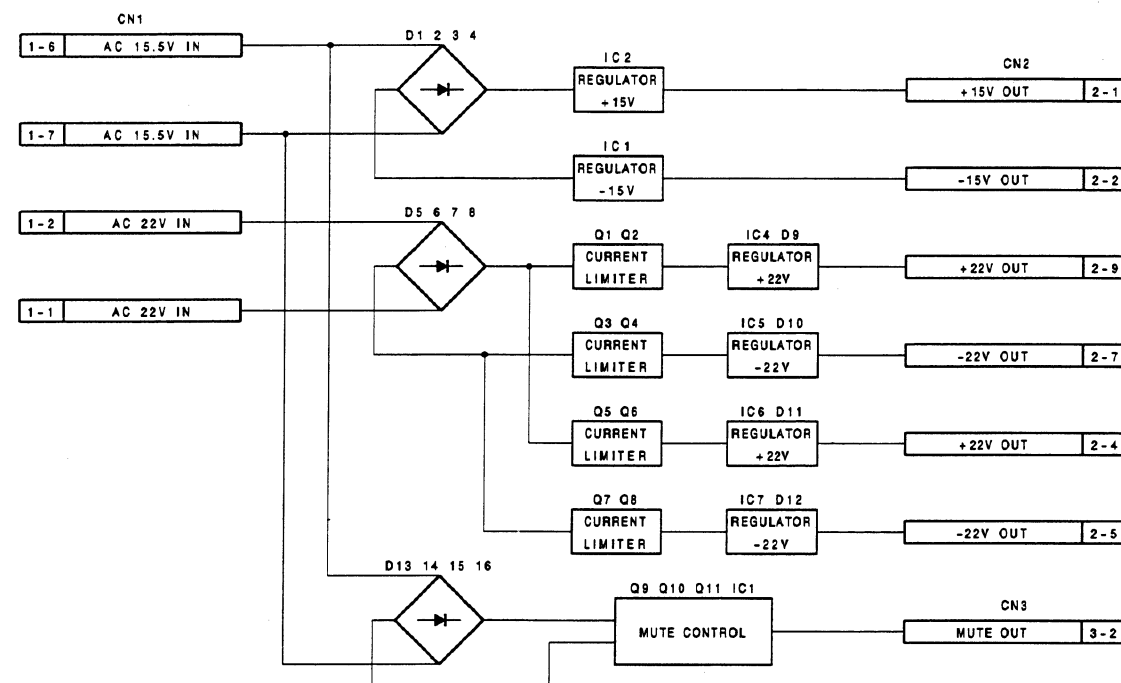
PS-211 BOARD
Power Supply



PS-211
The PS-
system (I
D9/IC5,
CONTROL
the powe
+ 15V us
18 board
source o
different :
(Q1, Q2/
more than
The MUT
three sec
-18 board
off, it sen
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PS-211
PCM-7030

PS-211 BOARD
Power Supply



PS-211 Board

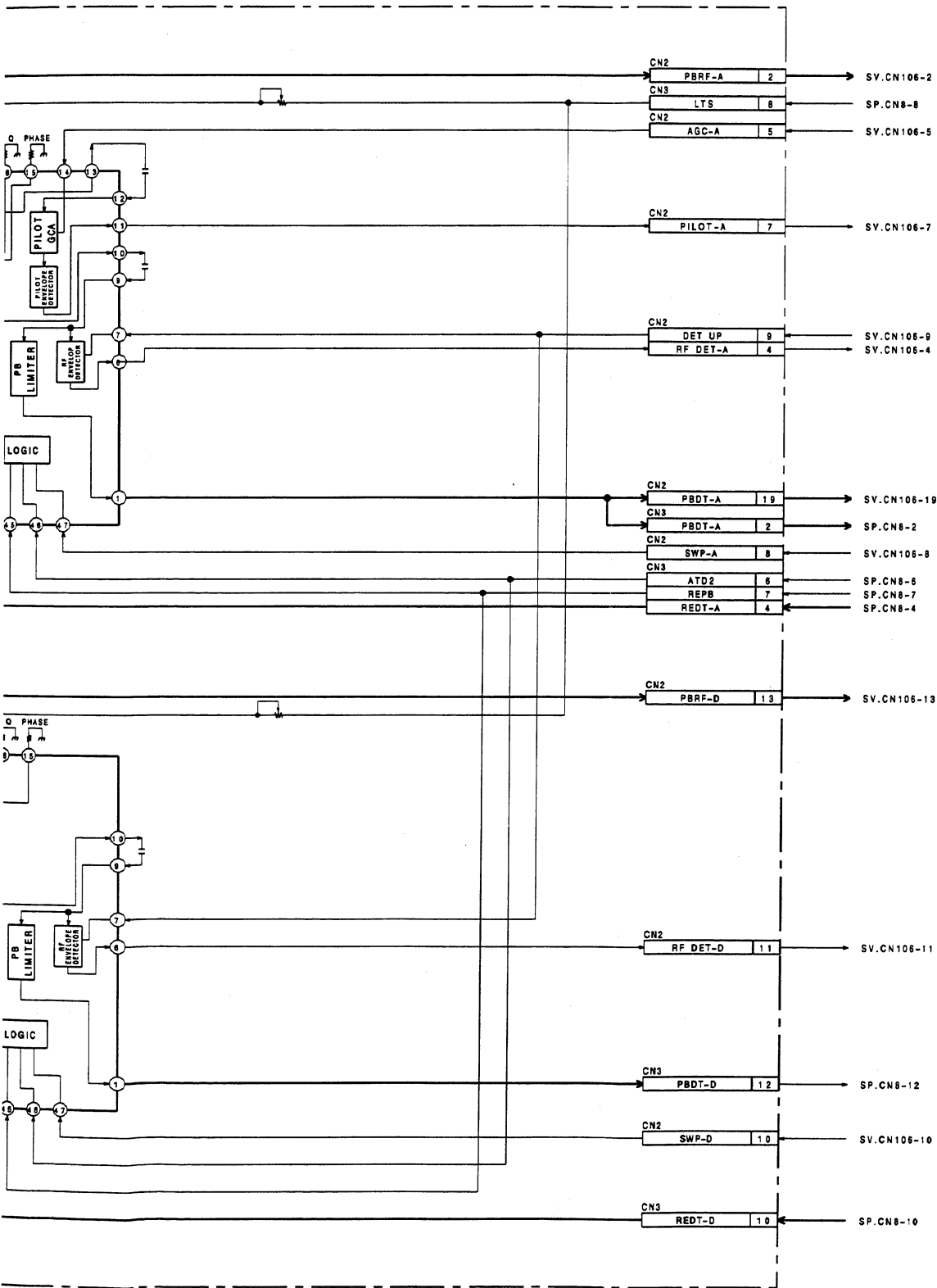
The PS-211 board consists of one analog +15V system (IC1/IC2), two analog +22V systems (IC4, D9/IC5, D10/IC6, D11/IC7, D12) and the MUTE CONTROL (Q9-Q11, IC1) which controls mute when the power turned ON/OFF.

+15V uses the analog power source of the ADA-18 board and +22V uses the LINE OUT AMP power source of the ADA-18 board supplying in the different system for ch1 and ch2. The current limiter (Q1, Q2/Q3, Q4/Q5, Q6/Q7, Q8) will work when more than 100mA electricity is sent to the regulator. The MUTE CONTROL outputs the mute release signal three seconds after power on and relay on the ADA-18 board will be turned on, and shortly after power off, it sends the MUTE ON signals and turn off the relay in order to avoid the occurrence of popping noise.

PS-211
PCM-7030

(RF AMPLIFIER) (RF AMPLIFIER)
BLOCK DIAGRAM RF-31 RF-31 BLOCK DIAGRAM





RF-31
PCM-7030

RF-31 Board

The RF-31 board can record and playback the digital signal into the tape and mainly consists of two RF amplifier ICs (IC1, 2) for leading head and trailing head.

The RF amplifier IC is integrated the recording/playback amplifier, PCM equalizer and ATF analog signal processing block into one chip.

1. The REC signal flow

During recording, the recording signal REDT-A (A, Bch) and REDT-D (A', B'CH) from the digital signal processing IC on the SP-13 board is entered into the REC gain control division of the IC (IC1 for leading head recording and IC2 for trailing head recording) on the SP-13 board. The recording signal is converted from the voltage into the current and the current is adjusted to meet the head feature of A, B, A', B'ch (PCM current adjustment leading head: RV101 for Ach, RV102 for Bch, trailing head: RV201 for A'ch, RV202 for B'ch, ATF current adjustment leading head: RV103 for Ach, RV104 for Bch, trailing head: RV203 for A'ch, RV204 for B'ch.). Then, it is amplified 40dB by the amplifier in the IC and is output to the drum.

2. The PB signal flow

The playback signal from the head is amplified 60dB (IC1 amplifies the leading head A, Bch and IC2 amplifies the trailing head A', B'ch) and is output to the SV-123 board as PBRF-A (A, Bch) and PBRF-D (A', B'ch). On the other hand, the playback signal amplified 60dB is amplified and phase-equalized in

each EQ division of IC1 and IC2 (High frequency characteristic adjustment: leading head A, Bch = RV105, trailing head A', B'ch = RV205). During the VARI PITCH, The EQ high frequency characteristic is controlled by VARI PITCH voltage (LTS) from SP-13 board in order to check inferiority of the error rate. The wave-equalized playback signal is converted to the rectangular wave with an amplitude of 870mVp-p by the limiter in the IC and is output as REDT-A (leading head A, Bch) and REDT-D (trailing head A', B'ch).

3. ATF analog signal process division

(1) Detection the detection signal of tracking error (normal speed and variable speed playback)

The IC1 on the RF-31 board extracts the pilot signal (130KHz) from the playback signal and adjusts the gain based on the features of A and B head by the AGC-A signal that the pilot gain control amplifier in the IC1 is transmitted from the SV board. Then, the envelope of the pilot signal is generated and output to the PILOT-A.

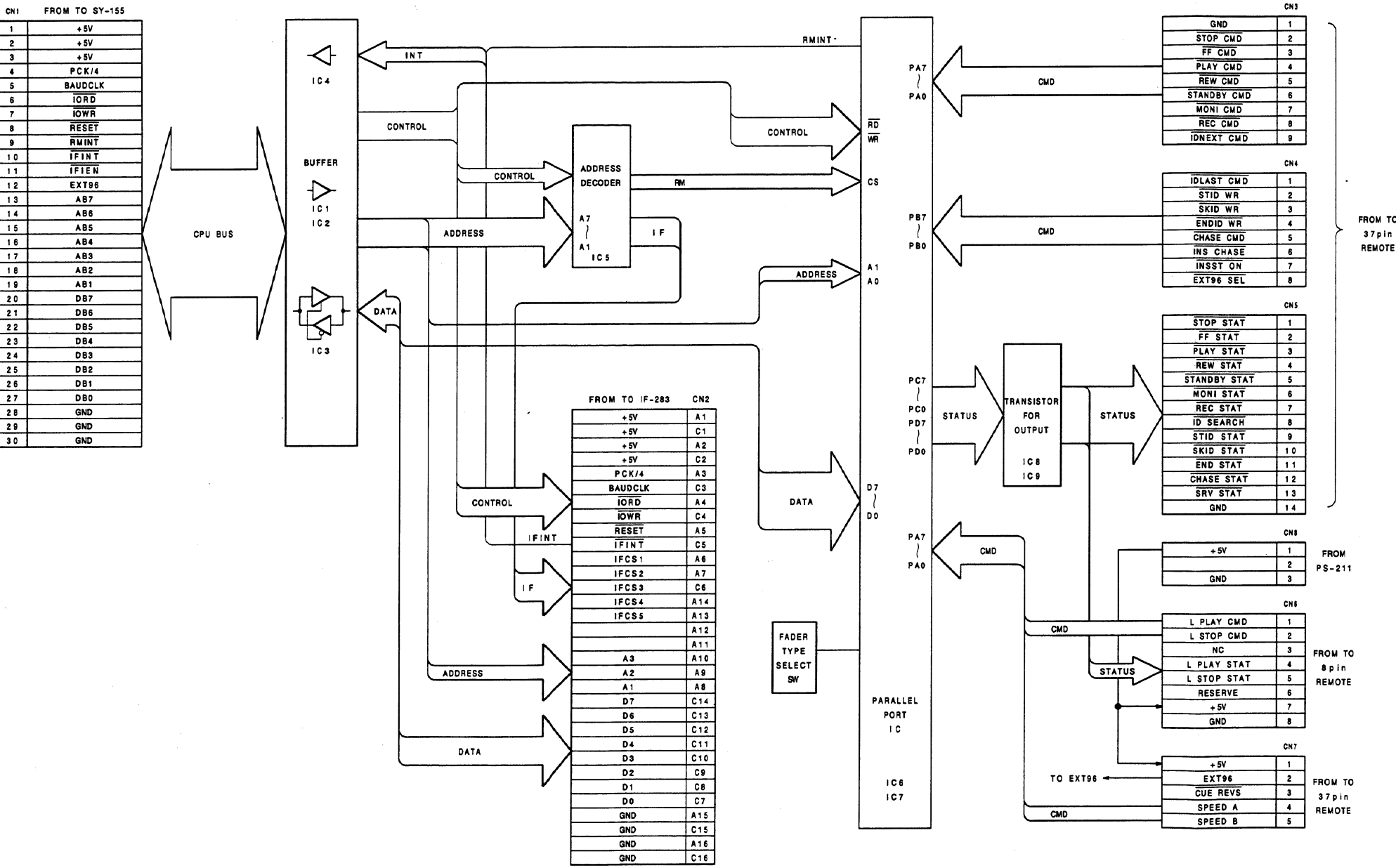
(2) RF envelope detection

The RF envelop detector in the IC inputs the PCM equalizer output and detects the PCM band signal out of the RF signal and output the outcome to the RF DET-A (IC1 leading head A, Bch) and RFDET-D (IC2 trailing head A', B'ch). It also shifts the threshold voltage level to normal PB mode and search mode.

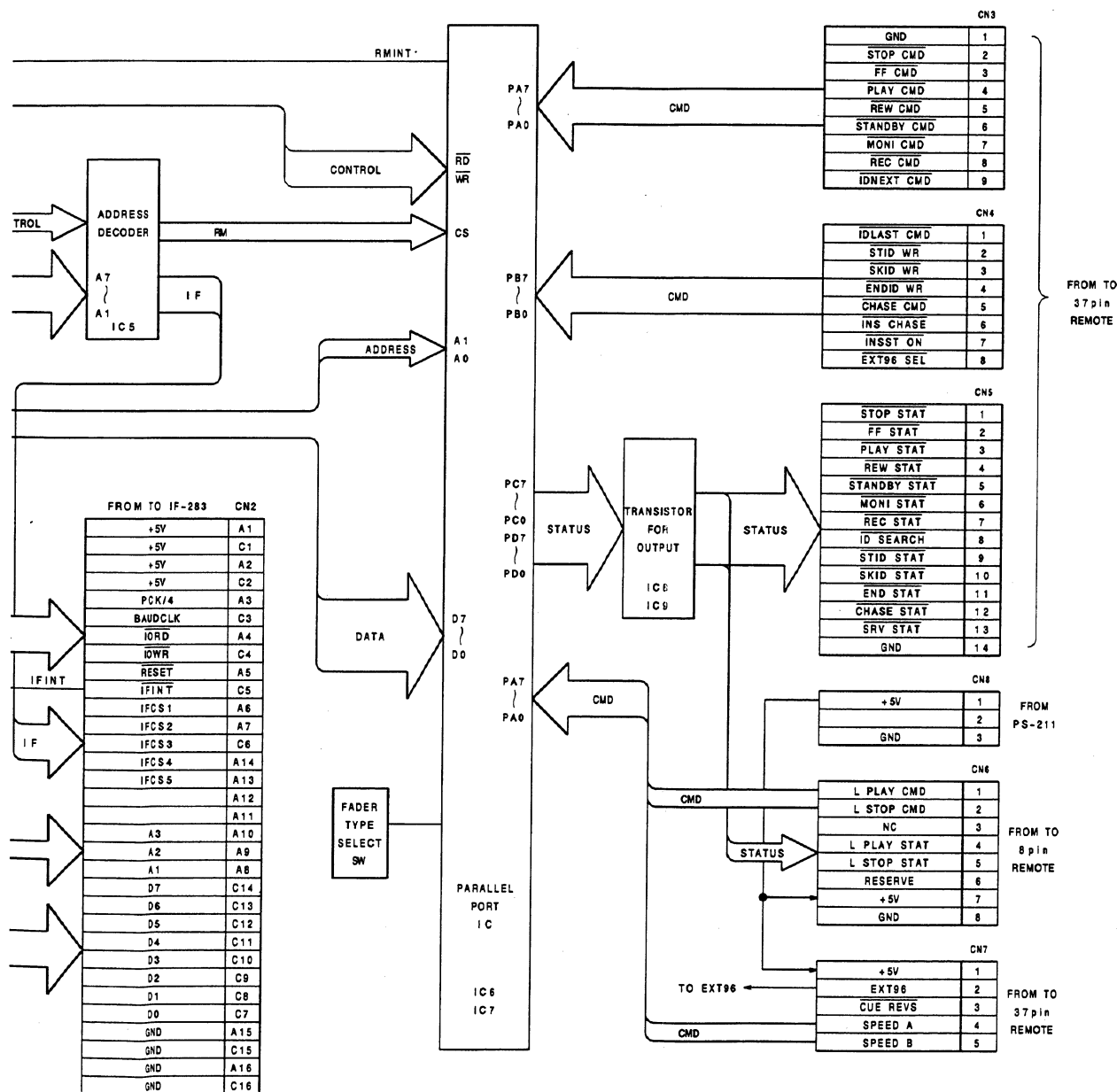
	Ach				Bch				A'ch				B'ch			
	PCM		ATF		PCM		ATF		PCM		ATF		PCM		ATF	
	REC	PB	REC	PB	REC	PB	REC	PB	REC	PB	REC	PB	REC	PB	REC	PB
REPB	H	L	H	L	H	L	H	L	H	L	H	L	H	L	H	L
ATD2	L	L	H	H	L	L	H	H	L	L	H	H	L	L	H	H
SWP-A	L	L	L	L	H	H	H	H	-	-	-	-	-	-	-	-
SWP-D	-	-	-	-	-	-	-	-	L	L	L	L	H	H	H	H

REC/PB SYSTEM CONTRLL LOGIC TRUTH VALUE

RM-77 BOARD
Parallel Remote



RM-77
The RM-77
and 8pin
PORT ga
It sends
process
command
The PS-2
CN6 and
500 (mA)
SW1 is
fader star
for level
CN2 48pi
to install
DABK-70



RM-77 Board

The RM-77 board is to control 37pin parallel remote and 8pin fader start remote. It uses two 32bit I/O PORT gate arrays (IC6, 7) to output the status. It sends the SY-155 board an offering signal for process requirement when 50msec pulse input command is transmitted.

The PS-211 board supplies +5V to 7pin of connector CN6 and 1pin of CN7 and is able to supply up to 500 (mA).

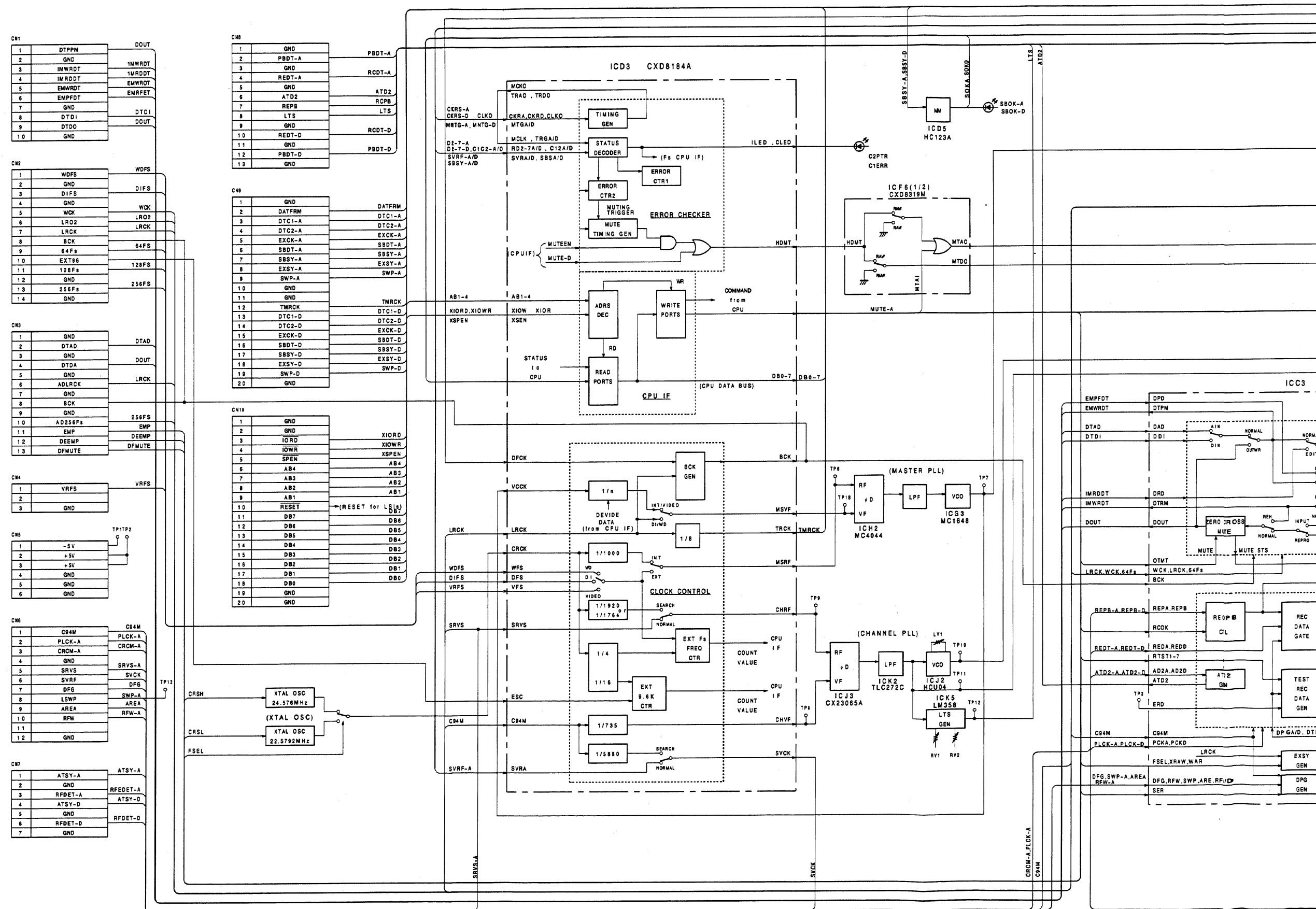
SW1 is to specify the shift the PLAY/STOP for fader start to 2 switch for pulse input and 1 switch for level input.

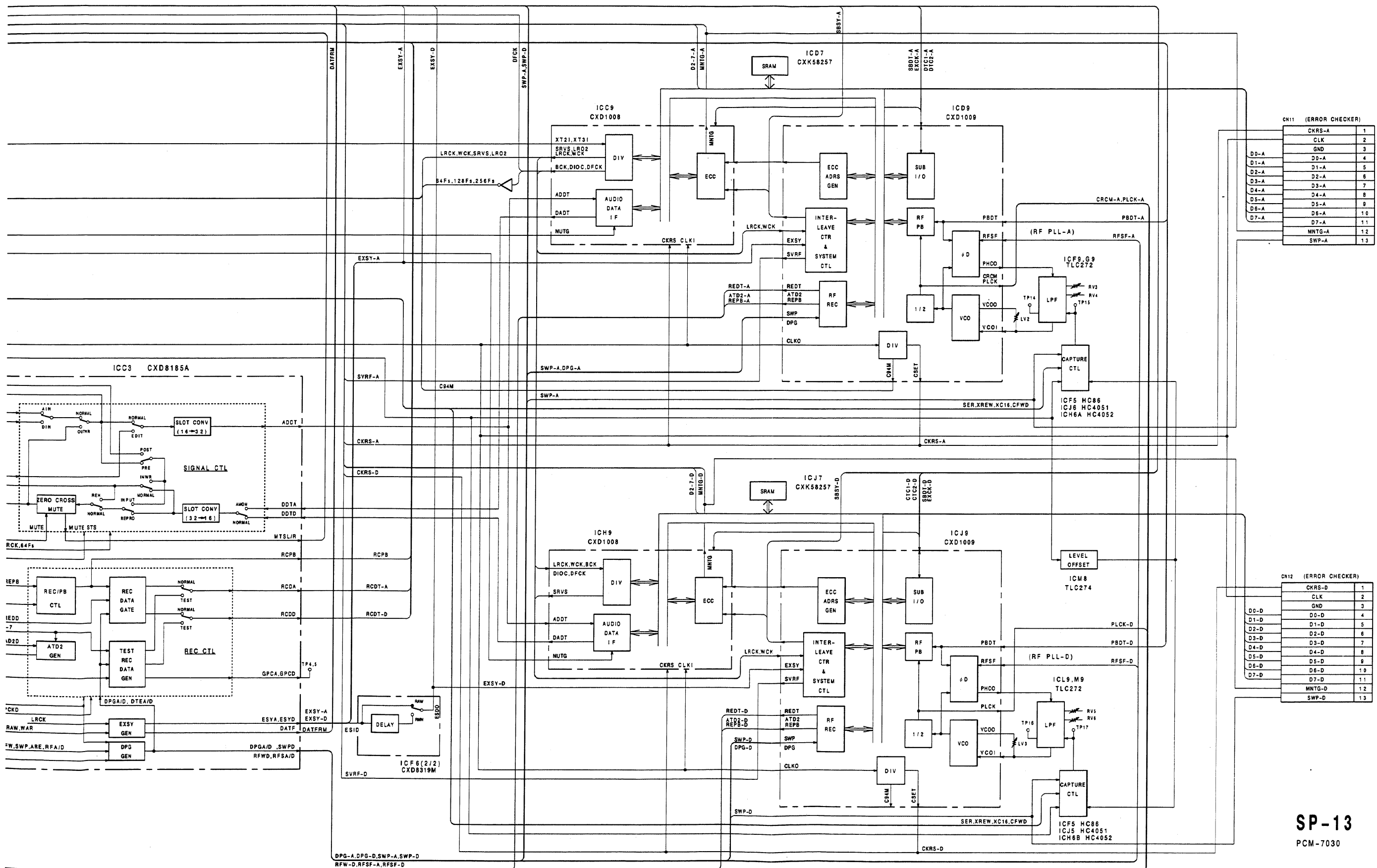
CN2 48pin DIN connector on the RM-77 board is to install the optional board (IF-283 board) for the DABK-7033 RS-232C.

(SIGNAL PROCESSOR)
BLOCK DIAGRAM SP-13

(SIGNAL PROCESSOR)
SP-13 BLOCK DIAGRAM

SP-13 BOARD
Signal Processor





SP-13 Board

The SP-13 board has the features that encodes the audio and sub-code signals according to the DAT format and sends the encoded signal to the recording amplifier; decodes the signal transmitted from the playback amplifier and takes the audio and sub-code signals to send each boards.

The audio signals transmitted from the A/D converter (ADA-18 board) and AES/EBU D-IN (DIO-10 board) are first entered into CXD8185A (ICC3). The audio signal from ICC3 will be transmitted to CXD1008 (IC9/ICH9) through the conversion from 16bit slot into 32bit slot after selected by the AUDIO INPUT switch (ANALOG/DIGITAL) in ICC3. On the other hand, the sub-code came from the SY-155 board enters into CXD1009 (ICD9/ICJ9). The audio signal and the sub-code signal receive the interleave, ECC encoding and 8-10 modulation in CXD1008 and CXD1009, and are transmitted to the recording amplifier (RF-31 board) with the ATF signal and are recorded on the tape (RCDT-A, RCDT-D).

The playback signal (PBDT-A, PBDT-D) transmitted from the playback amplifier (RF-31 board) enters into CXD1009. Data extraction clock is generated by RFPLL circuit and the playback data is extracted by this clock. The extracted data receive the 10-8 demodulation, ECC decoding and deinterleave in CXD1008 and CXD1009, and are output as the audio signal and sub-code signal. The sub-code signal is sent to the SY-155 board. The audio signal receives the conversion from 32bit slot to 16bit slot in CXD8185A and is transmitted to the D/A converter (ADA-18 board), AES/EBU D-OUT (DIO-10 board), METER (KY-192 board) and MEMORY (MEM-40 board).

The signal process ICs for DAT (CXD1008, 1009) are used in pairs in the leading head and trailing head. Generally, the leading head for recording and the trailing head for playback. In SUB INSERT mode, the leading head for playback and the trailing head for recording the sub-code. Also, the tape recorded with the Wide track mode is played back the leading head.

The SP-13 board includes the following circuit other than the above:

Error block counter (in CXD8184A): enables the CPU (SY-155 board) to monitor the error rate by counting the numbers of error detected blocks during playback.

Muting circuit (in CXD8184A and CXD8185A): performs a zero-cross mute to the playback audio signal when playback error rate becomes worse than the initially set-up threshold.

PLL circuit: consists of the Master PLL which generates master clock and the Channel PLL which generates the reference clock for the recording signal. The dividing circuit (in CXD8184A) is controlled by CPU and enables the VARI SPEED function.

Frequency counter (in CXD8184A): measures frequency of the external reference clock and EXT SOURCE from the parallel remote connector.

Audio signal switch circuit (in CXD8185A): shifts signal flow by corresponding with the modes such as memory start, editing as well as the normal recording and playback.

Test signal generating circuit (in CXD8185A): generates test signals in order to make the test tape for the mechanical servo adjustment.

(SIGNAL PROCESSOR)
BLOCK DIAGRAM SP-13

(SIGNAL PROCESSOR)
SP-13 BLOCK DIAGRAM

(REPRO FADER)
SP-17B BLOCK DIAGRAM

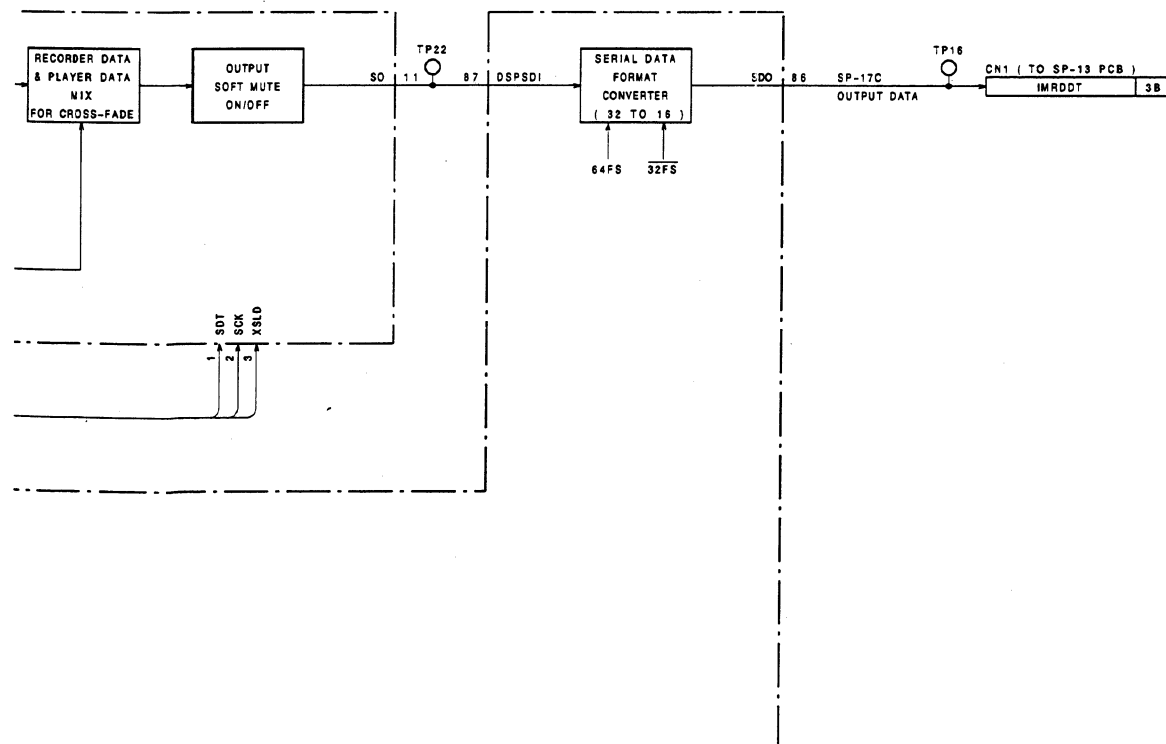
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SP-17B Board

The SP-17B board consists of two DSPs (CXD1160AP, IC10, CXD1160AP, IC11) and the gate array (IC1, CXD8163AQ) that controls them. It performs signal processing of the tape playback sound with DSPs, and using SP-17C board enables to cross-fade this sound signal with the player sound at an editing point.

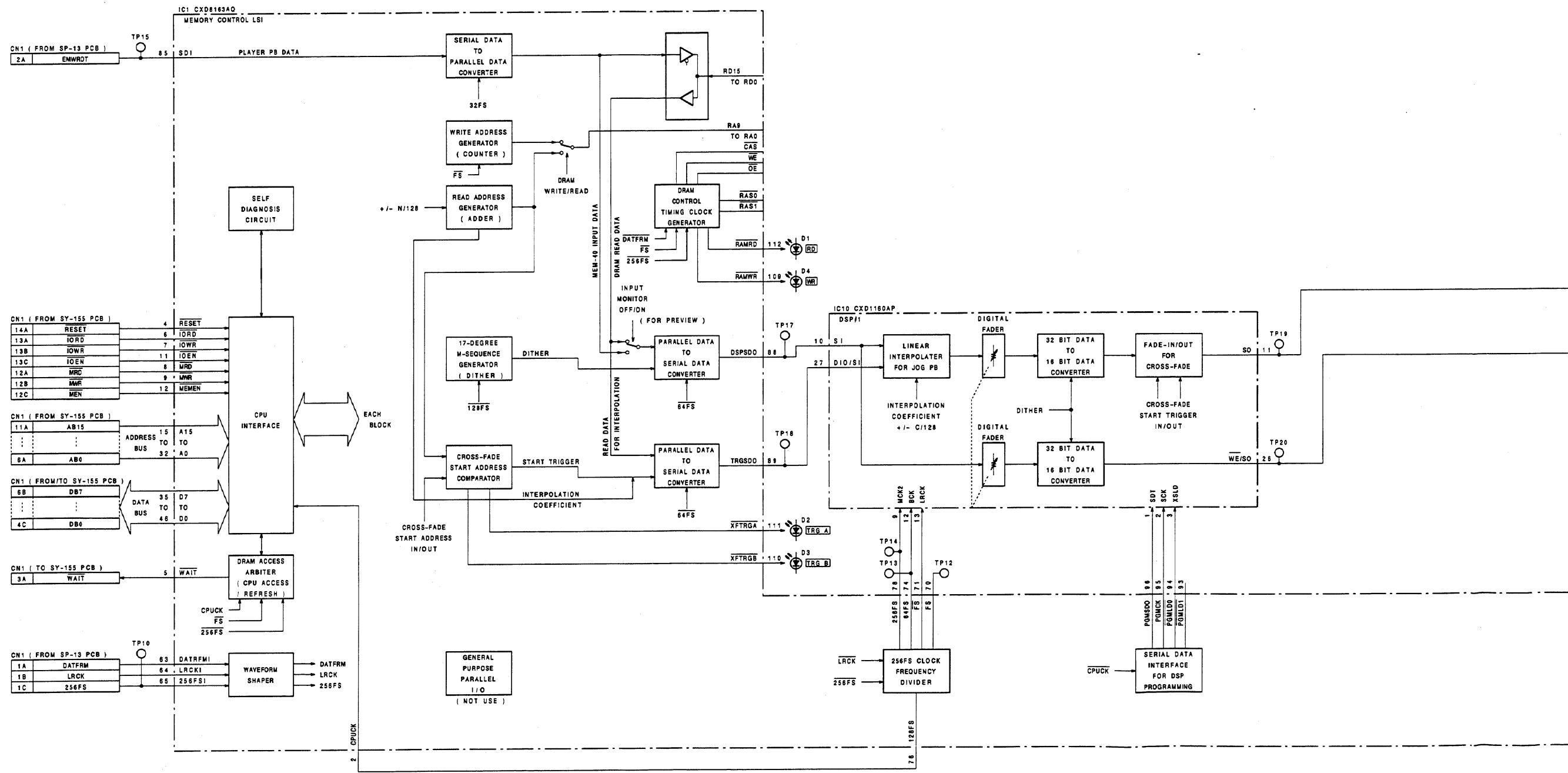
The DSP program is set by the system control through the DSP serial interface built into the gate array when the power is turned on. Starting triggers for cross-fade and FADE-OUT/FADE-IN are generated in the gate array and are transmitted to the DSP.

The sound after its signal processing in the DSP returns to the gate array and is output to the SP-13 board. After that, it is converted digital to analog (D/A conversion) on the ADA-18 board, is output in digital from the DIO-10 board and is recorded on the tape of the recorder.



SP-17B
PCM-7030

SP-17C BOARD
Input Fader



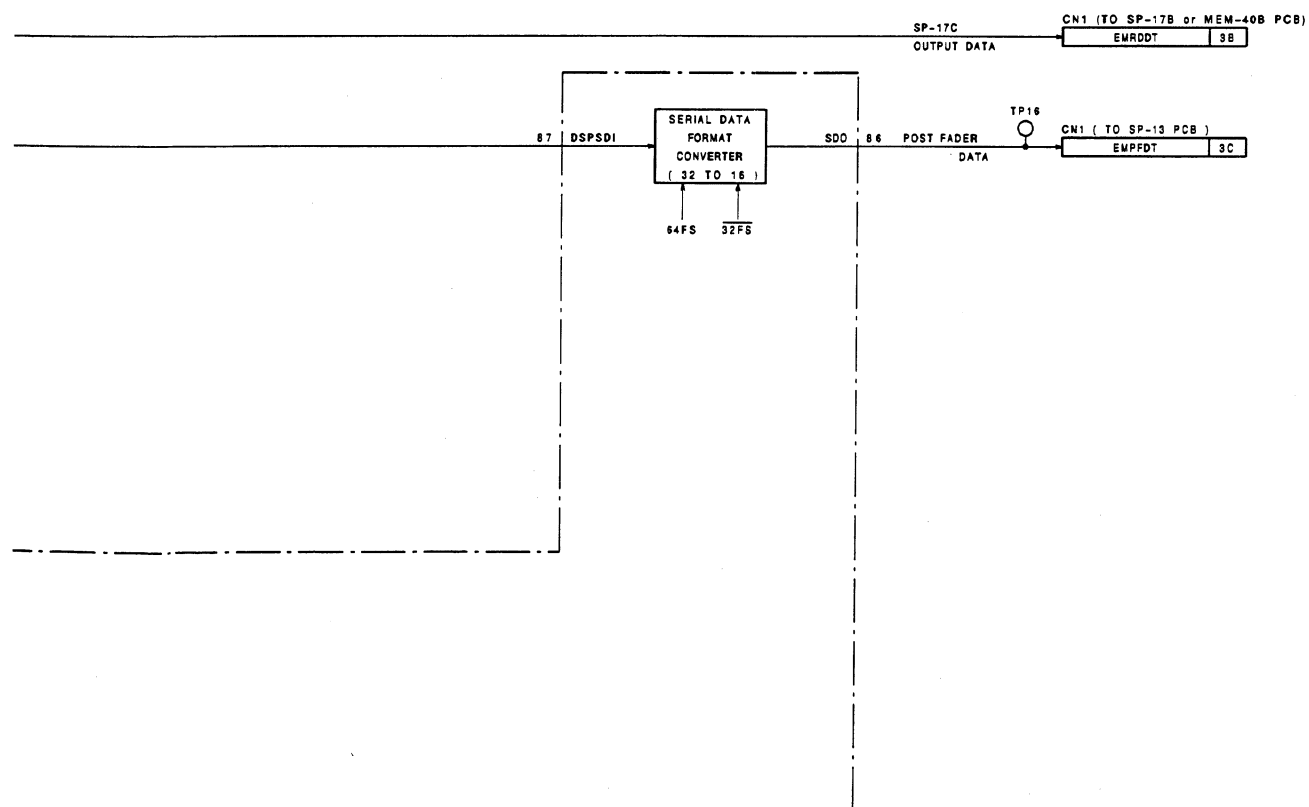
SP-17C Board

The SP-17C board consists of the DSP (CXD1160AP, IC10) and the gate array (CXD8163AQ, IC1) that controls them. It performs an input signal processing from the outside with DSP, and using SP-17C board enables to cross-fade this sound signal with the recorder sound at an editing point.

The DSP program is set by the system control through the DSP serial interface built into the gate array when the power is turned on. Starting triggers for cross-fade and FADE-OUT/FADE-IN are generated in the gate array and are transmitted to the DSP.

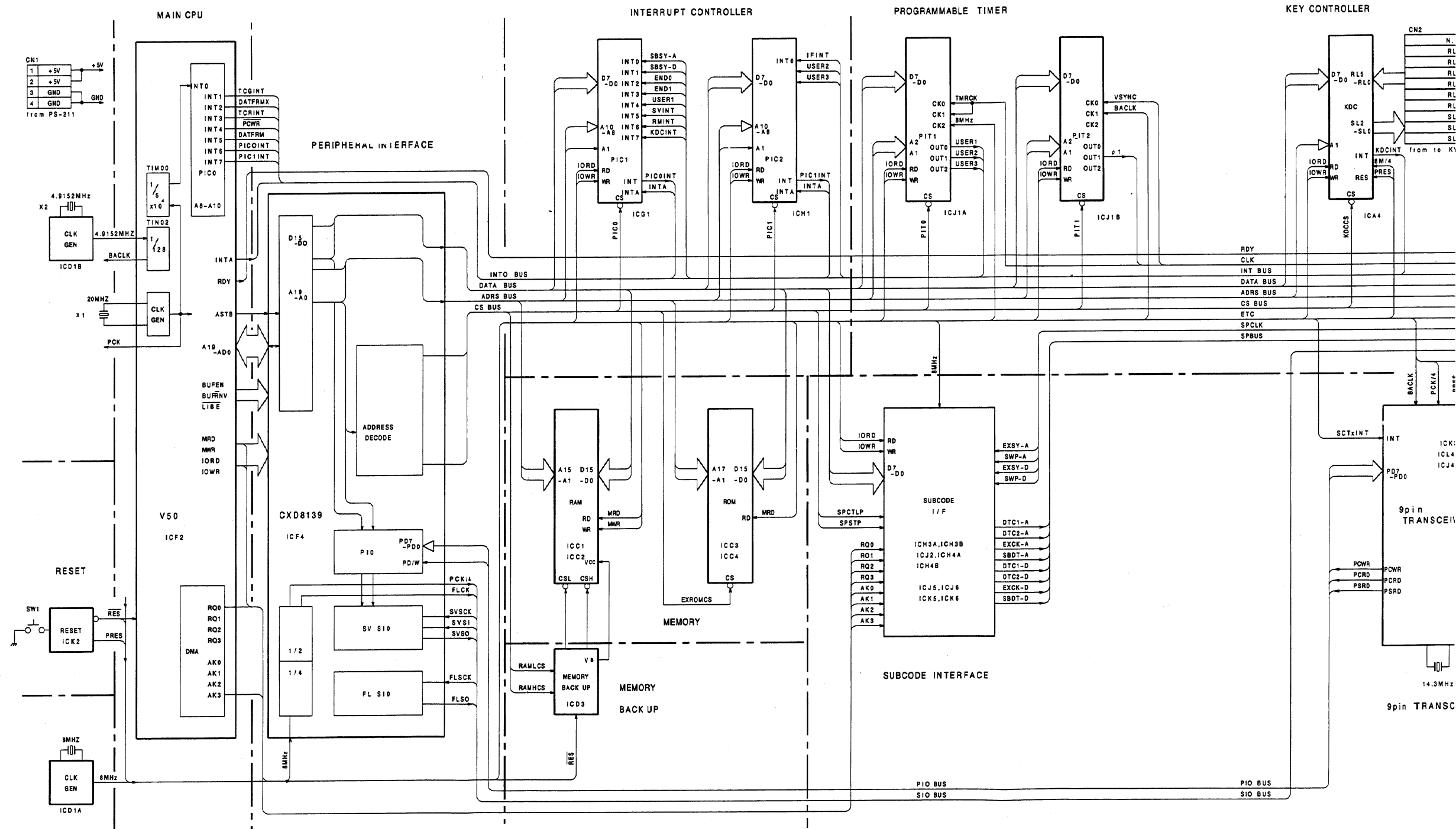
The sound after its signal processing in the DSP is sent to the SP-17B board. It is added to the recorder sound in the DSP (CXD1160AP, IC11) on the SP-17B board, and is returned again to the gate array.

After that, it is output to the SP-13 board.

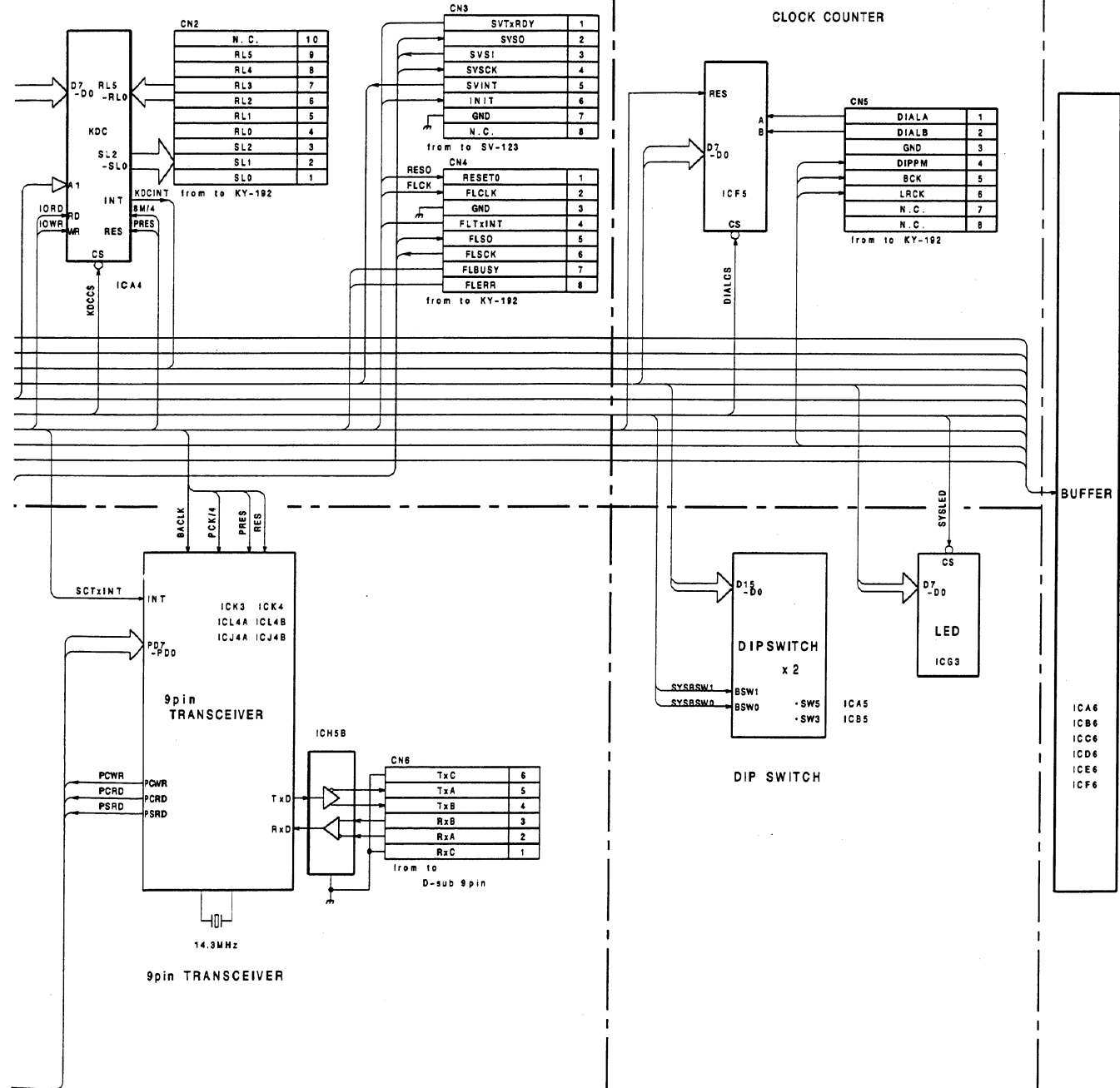


SP-17C
PCM-7030

SY-155 BOARD
System Control



KEY CONTROLLER



from to SP-13

CN9		
GND	1	
DATFRM	2	
DTCT-A	3	
DTCT-B	4	
EXCK-A	5	
SBDT-A	6	
SBSY-A	7	
EXSY-A	8	
SWP-A	9	
GND	10	
GND	11	
TMRCK	12	
DTCT-D	13	
DTCT-E	14	
EXCK-D	15	
SBDT-D	16	
SBSY-D	17	
EXSY-D	18	
SWP-D	19	
GND	20	

CN10		
GND	1	
GND	2	
IORD	3	
IOWR	4	
SPEN	5	
AB4	6	
AB3	7	
AB2	8	
AB1	9	
RESET	10	
DB7	11	
DB6	12	
DB5	13	
DB4	14	
DB3	15	
DB2	16	
DB1	17	
DB0	18	
GND	19	
GND	20	

CN7		
WDPS	1	
GND	2	
DIFS	3	
GND	4	
WCK	5	
LRO2	6	
LRCK	7	
BCK	8	
64FS	9	
EXT98	10	
128FS	11	
GND	12	
256FS	13	
GND	14	

CN8		
DTPPM	1	
GND	2	
IMWRDT	3	
IMRRDT	4	
EMNRDT	5	
EMPRDT	6	
GND	7	
DTDI	8	
DTDO	9	
GND	10	

from to MEM-40

CN13		
+5V	A1	
+5V	B1	
+5V	C1	
GND	A2	
GND	B2	
GND	C2	
RES	A3	
CLKOUT	B3	
CLKRTN	C3	
IORD	A4	
IOWR	B4	
MRIEN	C4	
MRO	A5	
MWR	B5	
MRMEN	C5	
AB15	A6	
AB14	B6	
AB13	C6	
AB12	A7	
AB11	B7	
AB10	C7	
AB9	A8	
AB8	B8	
AB7	C8	
AB6	A9	
AB5	B9	
AB4	C9	
AB3	A10	
AB2	B10	
AB1	C10	
AB0	A11	
DB7	B11	
DB6	C11	
DB5	A12	
DB4	B12	
DB3	C12	
DB2	A13	
DB1	B13	
DB0	C13	
WAIT	A14	
EMRRDT	B14	
N.C.	C14	
IMWRDT	A15	
EMRRDT	B15	
256RTN	C15	
DATFRM	A16	
LRCK	B16	
256FS	C16	

from to DIO-10

CN15		
+5V	A1	
+5V	B1	
+5V	C1	
GND	A2	
GND	B2	
GND	C2	
RES	A3	
CLKOUT	B3	
CLKRTN	C3	
IORD	A4	
IOWR	B4	
DREN	C4	
N.C.	A5	
N.C.	B5	
N.C.	C5	
N.C.	A6	
N.C.	B6	
N.C.	C6	
N.C.	A7	
N.C.	B7	
N.C.	C7	
N.C.	A8	
N.C.	B8	
N.C.	C8	
N.C.	A9	
N.C.	B9	
N.C.	C9	
WCK	A10	
AB2	B10	
AB1	C10	
LRO2	A11	
DB7	B11	
DB6	C11	
DB5	A12	
DB4	B12	
DB3	C12	
DB2	A13	
DB1	B13	
DB0	C13	
DTDI	A14	
WDPS	B14	
DIFS	C14	
DTDO	A15	
64FS	B15	
128RTN	C15	
BCK	A16	
LRCK	B16	
128FS	C16	

MOTHER BLOCK

from to TC-58

CN11		
REST	1	
PCK	2	
IORD	3	
IOWR	4	
TCCS	5	
TCINT	6	
TCINT	7	
VSYNC	8	
AB8	9	
AB7	10	
AB6	11	
AB5	12	
AB4	13	
AB3	14	
AB2	15	
AB1	16	
DB7	17	
DB6	18	
DB5	19	
DB4	20	
DB3	21	
DB2	22	
DB1	23	
DB0	24	
GND	25	
DATFRM	26	
LRCK	27	
WCK	28	
256FS	29	
GND	30	

from to RM-77

CN12		
+5V	1	
+5V	2	
+5V	3	
PCK/4	4	
61	5	
IORD	6	
IOWR	7	
REST	8	
RMINT	9	
IFINT	10	
IFEN	11	
EXT98	12	
AB7	13	
AB6	14	
AB5	15	
AB4	16	
AB3	17	
AB2	18	
AB1	19	
DB7	20	
DB6	21	
DB5	22	
DB4	23	
DB3	24	
DB2	25	
DB1	26	
DB0	27	
GND	28	
GND	29	
GND	30	

SY-155 Board

The SY-155 board is the main CPU (ICF2) and peripheral circuit that perform the main control operation as well as the mother board of the PCM -7050/7030.

There are a gate array (ICF4), an interrupting controller (PIC) (ICG1, ICH), an interval timer (PIT) (ICJ1A, B), a key encoder (ICA4), a sub-code serial I/F (ICJ6, ICK6), a two-phase clock counter, ROM (256K) (ICC3, ICC4), RAM (64K) (ICC1, ICC2), RAM BACK UP circuit (ICD3), a sub-CPU for RS422 (ICK3, ICK4) as peripheral units.

MAIN CPU (μ D70216-10, ICF2);

PD70216-10 (V50) is a 16bit micro-processor with the operation frequency of 10MHz.

Gate array for sub-CPU I/F (CXD8139AQ, ICF4); consists of two synchronous SIOs, one PIO and the address decoder.

PIC (μ D71059, (ICG1, ICH1));

Control 17 interrupts with a master PIC in the main CPU chip.

PIT (μ D71054 (ICJ1A, ICJ1B));

An interval timer with three 16bit, used for a timer for the operation system, baud rate generator, V-SYNC input detector.

Key encoder (TMP82C79, ICA4);

Inputs key data from the KY-192 board and performs sensor matrix process.

Sub-code serial I/F (CXD8130Q (ICJ6, ICK6), 27C256 -SCCKV1.0 (ICK5, ICJ5));

Synchronous SIO for controlling CXD1009 in the SP-13 board.

Two-phase clock counter (μ D4702G, ICF5);

Two-phase clock counter from the dial.

MEMORY (RAM) back up circuit (ICD3);

Performs back up for the MEMORY (RAM) during the power-off by using a condenser (C12, C13) and lithium battery (BT1).

Sub-CPU for the RS-422 (μ PD78C11 (ICK3), μ PD71051 (ICK4));

Converts the RS-422 serial communication into the parallel communication for the main CPU.

DESCRIPTION OF THE INTERRUPT

PIC0: INT0: System timer interruption for a real-time operating system RT30V for 5msec.

INT1: Interruption for the data loading from the time code generator.

INT3: Interruption for data ready from the external time code reader.

INT4: Interruption of the PIO RxRDY.

INT5: DAT FRAME interruption for 30msec.

INT6: Receiving usage for PIC1

INT7: Receiving usage for PIC2

PIC1: INT0: Interruption for the sub-code input/output of the leading processor.

INT1: Interruption for the sub-code input/output of the trailing processor.

INT2: Interruption by the access completion of the leading processor.

INT3: Interruption by the access completion of the trailing processor.

INT4: RESERVED

INT5: Interruption from the servo CPU (CX80524).

INT6: Interruption to inform the input alternation of the parallel remote.

INT7: Interruption from the Key encoder (TMP82C79).

PIC2: INT0: Interruption for IF-283, RS-232C

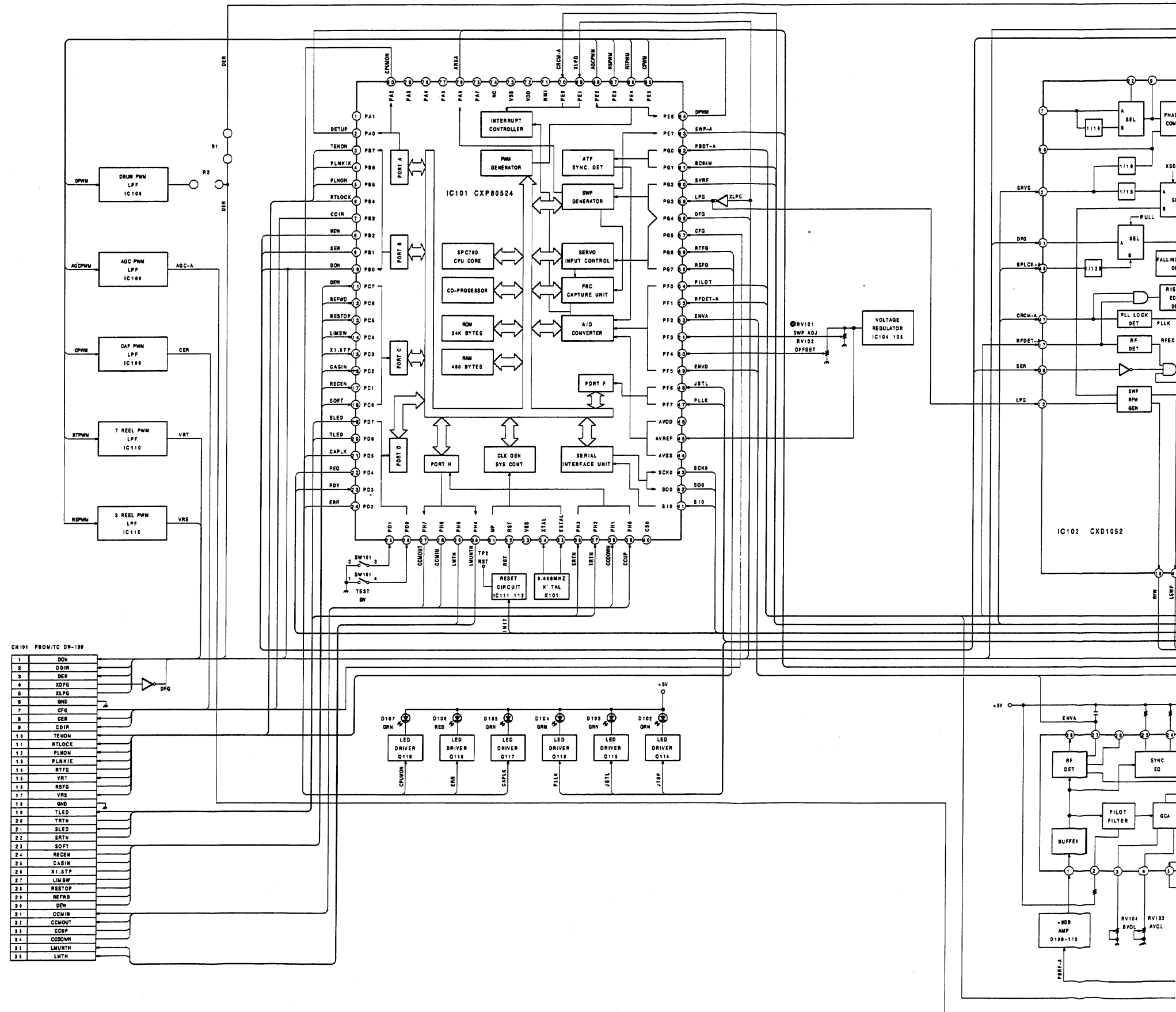
INT1: RESERVED

INT2: Timer interruption for the FL tube CPU.

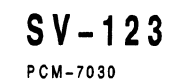
(SYSTEM CONTROL)
BLOCK DIAGRAM SY-155

(SYSTEM CONTROL)
SY-155 BLOCK DIAGRAM

SV-123 BOARD
Servo



(SERV
SV-12



SV-123 Board

The hardware of SV-123 board consists of the following blocks.

1. CXP80524 (IC101) and its peripheral circuit

CXP80524 (IC101) is the one-chip microprocessor which leads the center of the SV-123 board. It consists of CPU core, ROM, RAM blocks and the peripherals such as FRC capture, ATF sync detection circuit, etc. The error signals of each servo system are output as PWM waveforms (DRUM, AGC, CAP, T REEL, S REEL) and transmitted to each motor driver after removing carrier in L.P.F. (IC106, IC109, IC110).

(1) Operation process of the capstan servo

During REC mode, forward the tape in constant speed in order to get a track pitch based on the format. During play mode, use the tracking servo in order to make that the head traces correctly on the track and control the forward phase of tape. During CUE mode, run the tape for both forward and backward with multiple speed of 1/5, 1/2, 1, 2.5, 8, 16.

(2) Operation process of the reel servo

During FF and REW modes, use servo as the tape linear speed becomes 150 times. Reduce the speed to 80 times at the end of the tape.

During REC and play modes, feed back the positioning information of the tension regulator to S-motor in order to stabilize the head contact. In other mode, output a fixed data that generates an appropriate torque.

(3) Operation process of the reel counter

The tape running distance is calculated from the reel FG.

The tape running time is displayed in realtime at the display.

(4) The switch conditions on the mechanical deck receiving and device control

• Control for the loading motor

The loading motor is controlled by detecting the position of the rotary encoder condition.

• Control for the cassette compartment motor

The cassette compartment motor is controlled in accordance with the cassette compartment switch condition.

• Detection for the condition of the cassette identification holes (detection of cassette in/out, REC inhibit, track pitch and pre-recorded tape).

• The end sensors driving signal generation and tape end detection.

• Control for the reel break plunger.

(5) Drum servo IC control

CXD1052 (IC102) and CX20174 on DR-139 board are controlled.

(6) Generation for the information signal of the drum rotary phase

SWP-A, AREA signals are generated. These signals are sent to the RF-31 board and SP-13 board. Play the test tape during the SWP adjustment mode and adjust the phase between the SWP-A and playback RF waveform to comply with the standard. The adjusting data is stored in the memory of the SY-155 board.

(7) Gain control of the PILOT GCA in CXA1364 (RF-31 board)

Playback the test tape during the AGC adjusting mode, and perform automatic adjustment on each A head and B head for the PILOT GCA gain to stabilize the added voltage of the track contents of the pilot envelope waveform.

The adjusting data is stored in the memory of the SY-155 board.

(8) Communication with the system controller

Asynchronous serial communication is performed between SY-155 board.

2. CXD1052 (IC102) and its peripheral circuit

CXD1052 (IC102) is the digital servo IC for the drum motor. It has the loops for speed, phase and bias control, outputs the error signals in PWM waveforms (SPPW, PHPW, BSPW) which are added after removing the carrier in L.P.F. and transmitted to the motor driver (DR-139 board).

(1) Operation process of normal servo

During REC and PLAY modes, CXD1052 operates to lock the drum phase to the reference phase of signal processing block.

In REC mode, the drum rotates to make the tape pattern specified by DAT format.

In PLAY mode, the drum rotates to time the reproduced RF signal to the reference phase of signal processing block.

A gain-up circuit is added to speed up the phase lock operation.

(2) Operation process of search servo

During FF and REW modes, CXD1052 operates to regulate the period of PLL CK extracted from RF signal.

In this way, the relative speed between heads and tape is kept constant as long as the servo loop operates.

This makes it possible to read sub-code data intermittently.

During this mode, the PWM waveform of phase servo loop (PHPW) does not change.

(3) Generation for information signal of the drum rotary phase

LSWP, RFW signals are generated. These signals are sent to the SP-13 board.

3. CXA1046 (IC108) and its peripheral circuit

During the assemble recording in DAT, the recording is performed based on the drum PG. During the post-recording, it acknowledges the position from ATF pattern recorded on the tape to the head and generate the timing. Reproduced RF signal is equalized by

IC108 and transformed to ATF SYNC signal as its limiter output.

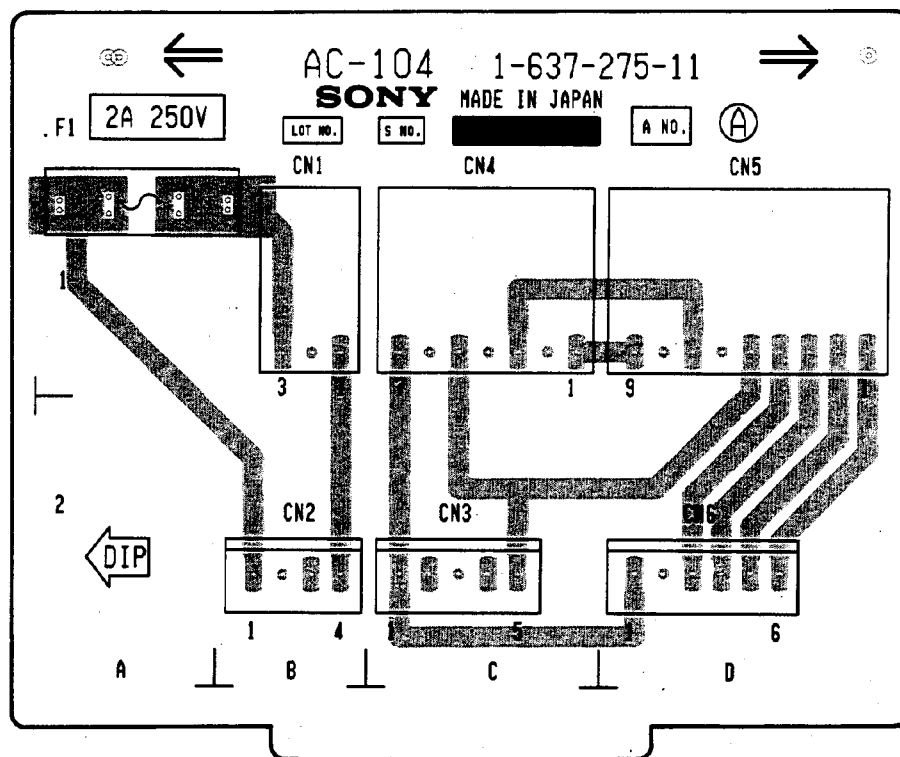
This signal is sent to SP-13 board to generate the timing to flow recording current.

SECTION B
CIRCUIT BOARD DIAGRAMS



AC-104

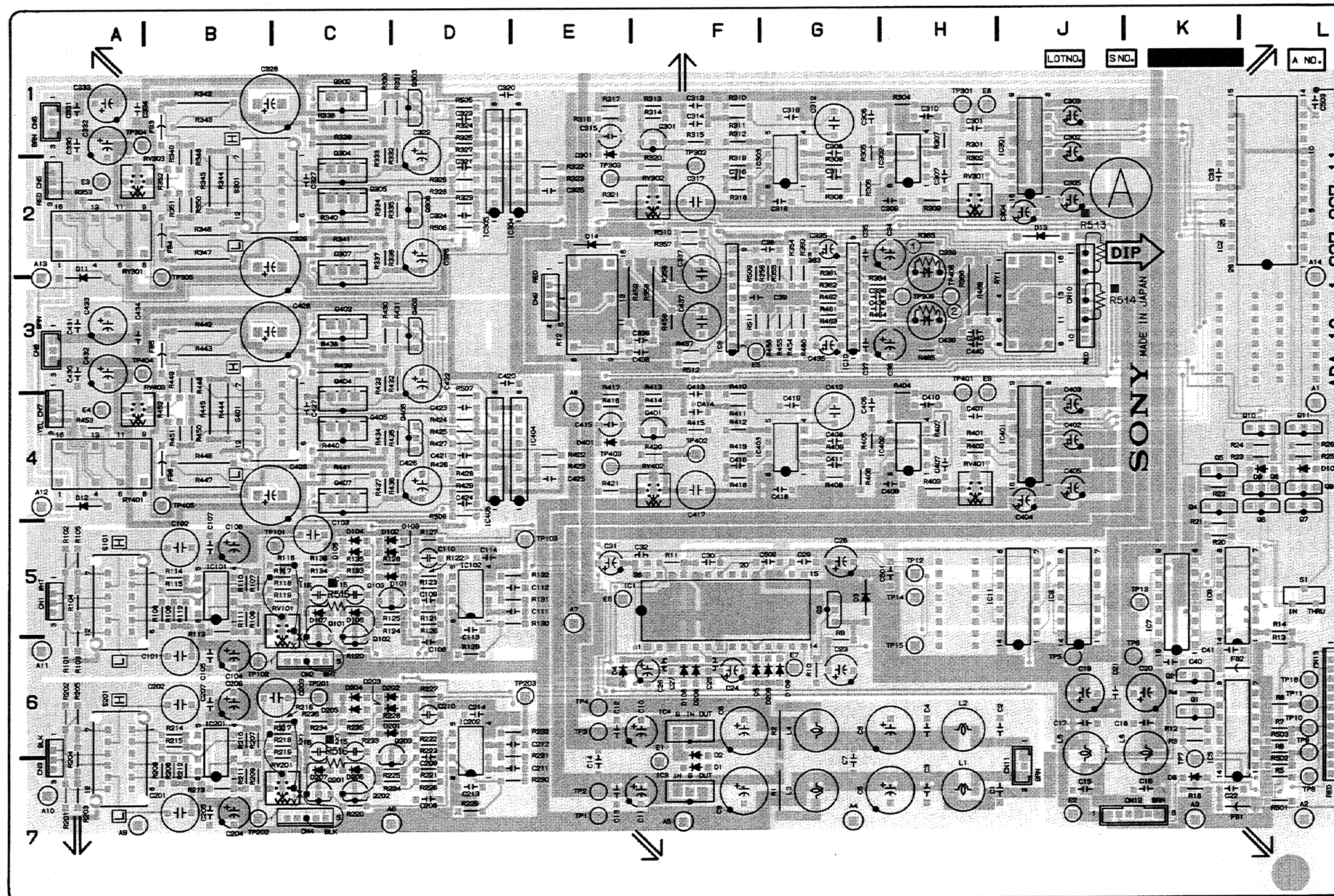
AC-104 BOARD (PCM-7030)
(1-637-275-11)
Component Side



SOLDER SIDE PATTERN 1-637-275-11

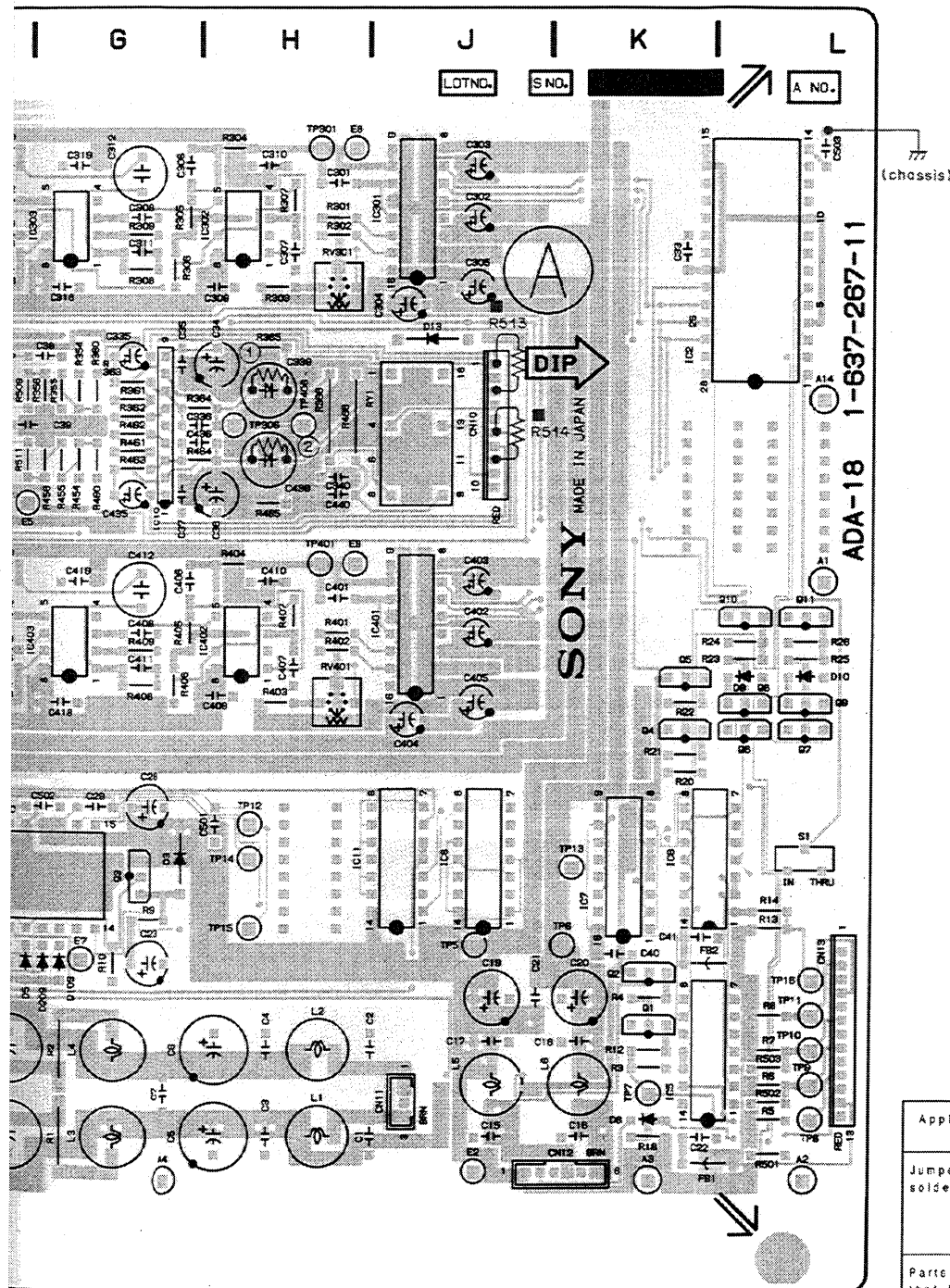
ADA-18 BOARD (PCM-7030)
(1-637-267-11)
Component Side

Serial No. UC 20001 to 20025
EK 50001 to 50060



SOLDER SIDE PATTERN 1-637-267-11

Applied Serial No. UC 20001 to 20025 EK 50001 to 50060			
	(Component Side)	(Solder Side)	
Jumpers that have been soldered or cut.	RV101-2 X Q101-D RV201-2 X Q201-D C503 GND(chassis)	R115 X R117 R215 X R217 RV101-1 X CN2-3 RV201-1 X CN4-3	Q101-E Q201-E RV101-1 RV201-1
Parts marked with * that have been installed on the solder side.	*R513 *R514 *R515 *R516		
Parts that have been changed.	C339 → ① 00 C439 → ② 00		



B-7(a)

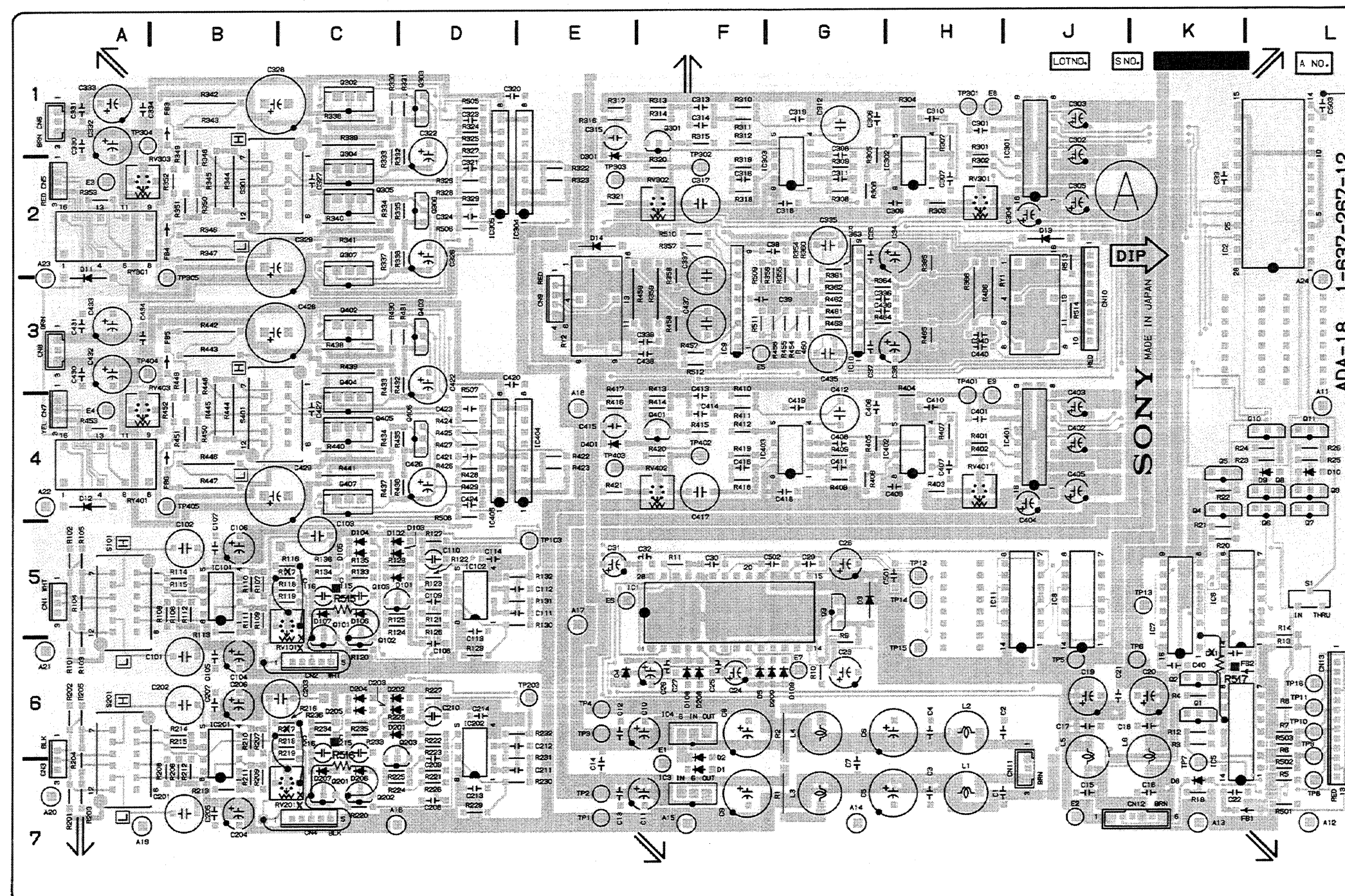
D1	F-7	IC5	K-7	Q402	C-3	TP305	B-3
D2	F-7	IC6	K-5	Q403	D-3	TP306	H-3
D3	G-5	IC7	K-5	Q404	C-3	TP401	H-3
D4	E-6	IC8	J-5	Q405	C-4	TP402	F-4
D5	F-6	IC9	F-3	Q406	D-4	TP403	E-4
D8	K-7	IC10	G-3	Q407	C-4	TP404	B-3
D9	L-4	IC11	H-5			TP405	B-4
D10	L-4	IC101	B-5	RV101	C-5	TP406	H-3
D11	A-2	IC102	D-5	RV201	C-7		
D12	A-4	IC201	B-6	RV301	H-2		
D13	J-2	IC202	D-6	RV302	F-2		
D14	E-2	IC301	J-2	RV303	B-2		
D101	D-5	IC302	H-2	RV401	H-4		
D102	C-5	IC303	F-2	RV402	F-4		
D103	D-5	IC304	E-2	RV403	B-3		
D104	C-5	IC305	D-2				
D105	C-5	IC401	J-4	S101	A-5		
D106	C-5	IC402	H-4	S201	A-6		
D107	C-5	IC403	F-4	S301	B-2		
D108	F-6	IC404	E-4	S401	B-4		
D109	G-6	IC405	D-4				
D201	C-6			TP1	E-7		
D202	C-6	Q1	K-6	TP2	E-7		
D203	C-6	Q2	K-6	TP3	E-6		
D204	C-6	Q3	G-5	TP4	E-6		
D205	C-6	Q4	K-4	TP5	J-6		
D206	C-7	Q5	K-4	TP6	K-6		
D207	C-7	Q6	L-5	TP7	K-7		
D208	F-6	Q7	L-5	TP8	L-7		
D209	G-6	Q8	L-4	TP9	L-6		
D301	E-2	Q9	L-4	TP10	L-6		
D401	E-4	Q10	L-4	TP11	L-6		
		Q11	L-4	TP12	H-5		
E1	F-6	Q101	C-5	TP13	K-5		
E2	J-7	Q102	C-6	TP14	H-5		
E3	A-2	Q103	C-5	TP15	H-6		
E4	A-4	Q201	C-7	TP16	L-6		
E5	F-3	Q202	C-7	TP101	C-5		
E6	E-5	Q203	D-6	TP102	B-6		
E7	G-6	Q301	F-1	TP103	E-5		
E8	H-1	Q302	C-1	TP201	C-6		
E9	H-3	Q303	D-1	TP202	B-7		
		Q304	C-2	TP203	E-6		
IC1	F-5	Q305	C-2	TP301	H-1		
IC2	K-2	Q306	D-2	TP302	F-2		
IC3	F-7	Q307	C-2	TP303	E-2		
IC4	F-6	Q401	F-4	TP304	A-1		

Applied Serial No. UC 20001 to 20025 EK 50001 to 50060			
Jumpers that have been soldered or cut.	(Component Side)	(Solder Side)	
	RV101-2 * Q101-D	R116 * R117	C101-D — CN2-3 RV201-2 — R217
	RV201-2 * Q201-D	R216 * R217	C201-D — CN4-3
Parts marked with * that have been installed on the solder side.	C503 — GND(chassis)	RV101-1 * CN2-3	RV101-1 — R116
		RV201-1 * CN4-3	RV101-2 — R117
			RV201-1 — R216
Parts that have been changed.	C335 — ① 00		
	C438 — ② 00		

B-8(a)

ADA-18 BOARD (PCM-7030)
(1-637-267-12)
Component Side

Serial No. UC 20026 to 20115
EK 50061 to 50380



(chassis)

ADA-18 1-637-267-12

Applied Serial No. UC 20026 to 20045
EK 50061 to 50200

Jumpers that have been soldered or cut.	Component Side		[Solder Side]	
	RV101-2	Q101-D	R116	R117
	RV201-2	Q201-D	R216	R217
	C503	GND(chassis)	RV101-1	CN2-3
			RV201-1	CN4-3

Parts marked with * that have been installed on the solder side.	*R515	
	*R516	

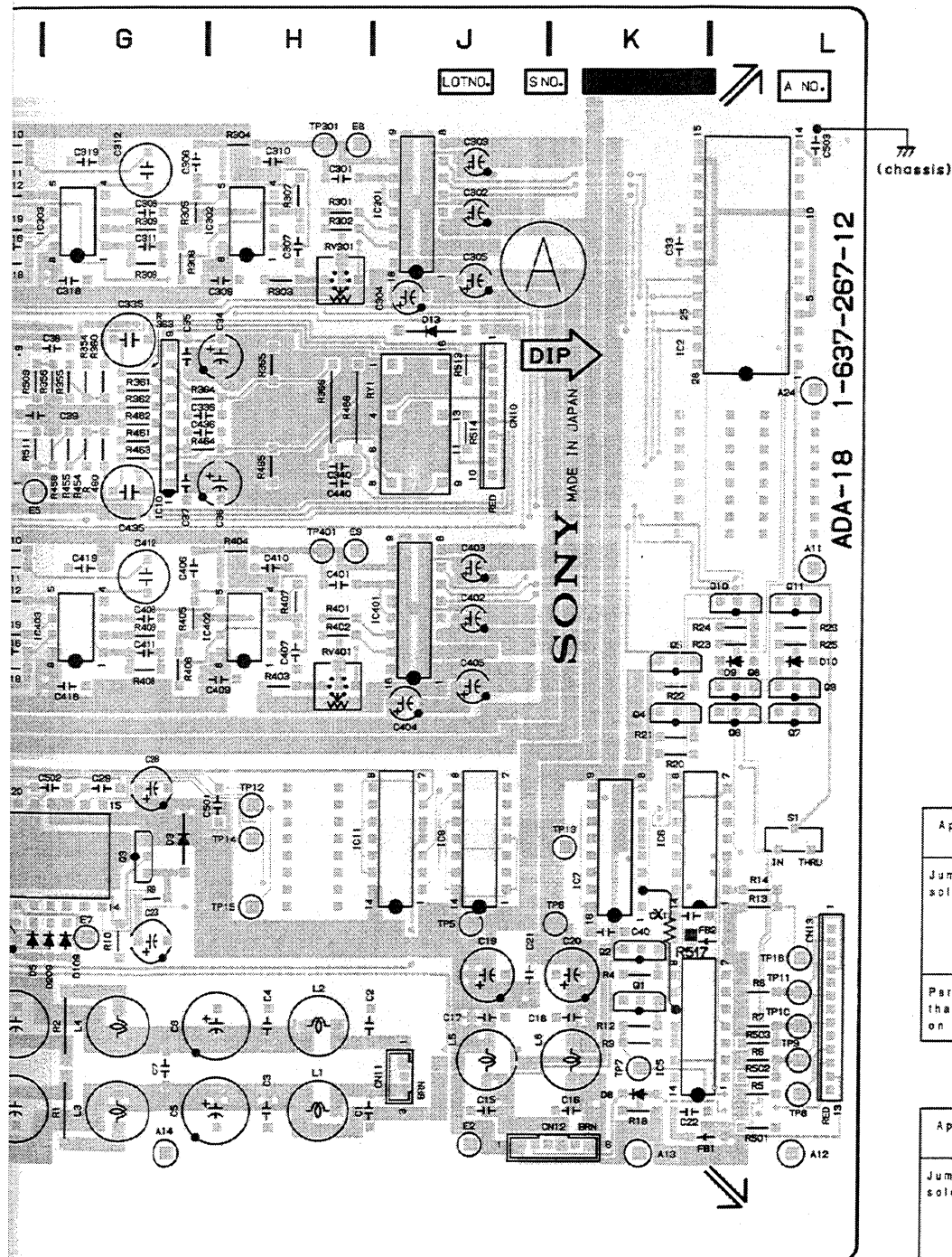
Applied Serial No. UC 20046 to 20115
EK 50201 to 50380

Jumpers that have been soldered or cut.	[Component Side]		[Solder Side]	
	RV101-2	~~X~~ Q101-D	IC5-10	~~X~~ IC7-2
	RV201-2	~~X~~ Q201-D	R116	~~X~~ R117
			R216	~~X~~ R217
			RV101-1	~~X~~ CN2-3
			RV201-1	~~X~~ CN4-3

Parts marked with * that have been installed on the solder side.	*R515	
	*R516	
	*R517	

B-6(b)

B-7(b)



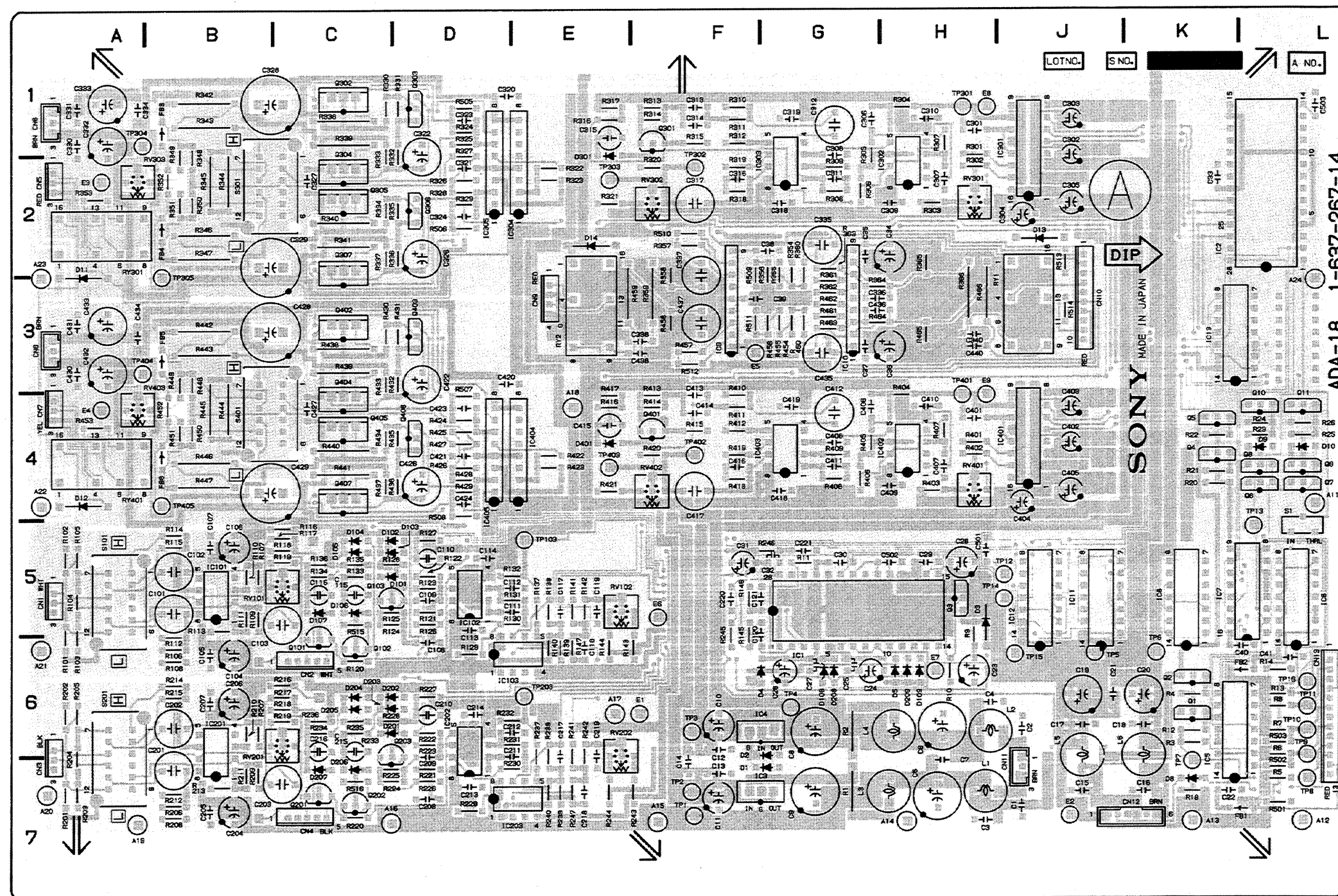
Applied Serial No. UC 20026 to 20045 EK 50061 to 50200			
Jumpers that have been soldered or cut.		(Component Side)	(Solder Side)
		RV101-2 X Q101-D	R116 X R117 Q101-D TP102
		RV201-2 X Q201-D	R216 X R217 Q201-D TP202
		C503 GND(chassis)	RV101-1 X CN2-3 RV101-1 R116
			RV201-1 X CN4-3 RV101-2 R117
			RV201-1 R216
			RV201-2 R217
Parts marked with * that have been installed on the solder side.		*R515	
		*R516	

Applied Serial No. UC 20046 to 20115 EK 50201 to 50380			
Jumpers that have been soldered or cut.		(Component Side)	(Solder Side)
		RV101-2 X Q101-D	IC5-10 X IC7-2 Q101-D TP102
		RV201-2 X Q201-D	R116 X R117 Q201-D TP202
			R216 X R217 RV101-1 R116
		RV101-1 X CN2-3	RV101-2 R117
		RV201-1 X CN4-3	RV201-1 R216
			RV201-2 R217
Parts marked with * that have been installed on the solder side.		*R515	
		*R516	
		*R517	

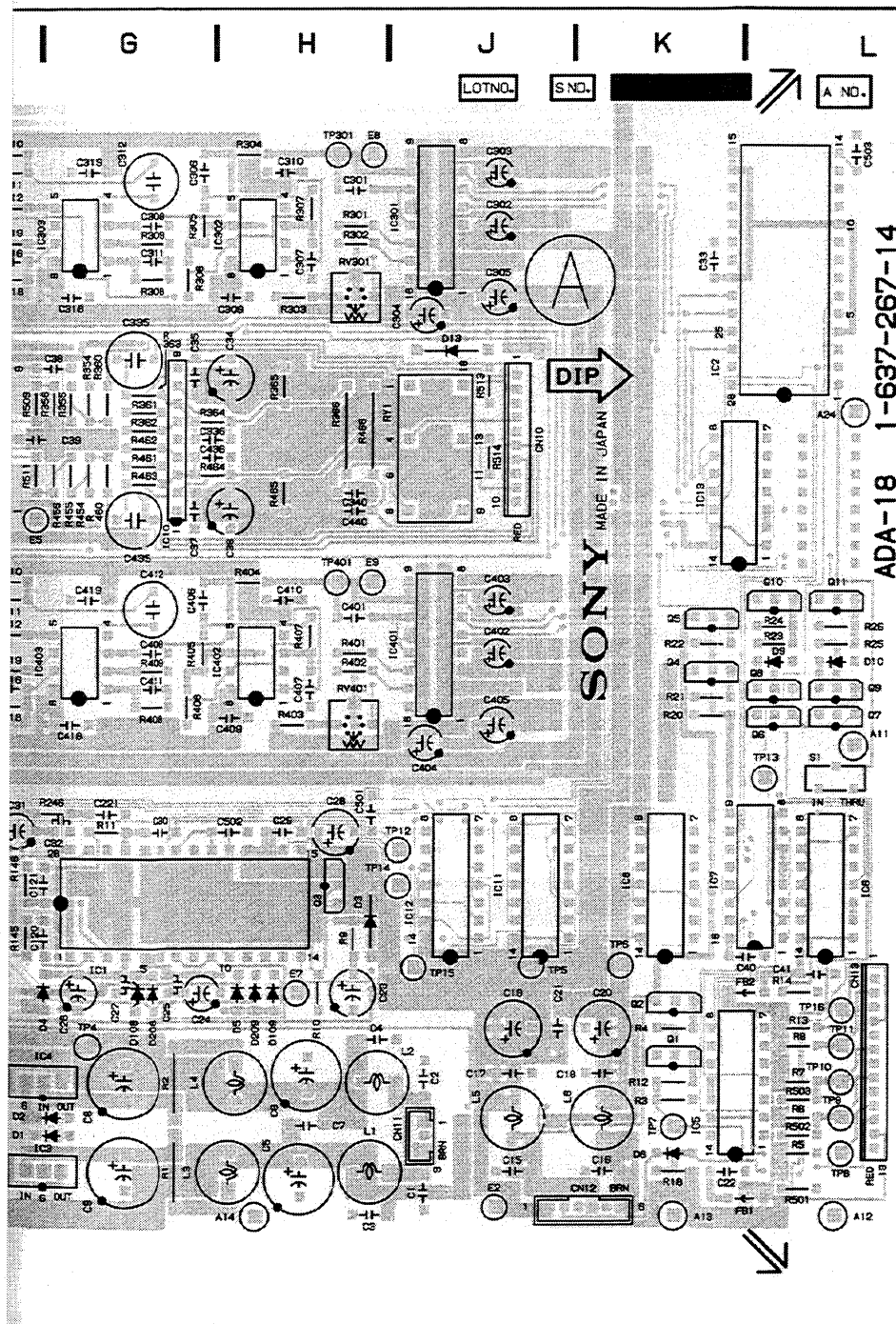
D1	F-7	IC5	K-7	Q402	C-3	TP404	B-3
D2	F-7	IC6	K-5	Q403	D-3	TP405	B-4
D3	G-5	IC7	K-5	Q404	C-3		
D4	E-6	IC8	J-5	Q405	C-4		
D5	F-6	IC9	F-3	Q406	D-4		
D8	K-7	IC10	G-3	Q407	C-4		
D9	L-4	IC11	H-5				
D10	L-4	IC101	B-5	RV101	C-5		
D11	A-2	IC102	D-5	RV201	C-7		
D12	A-4	IC201	B-6	RV301	H-2		
D13	J-2	IC202	D-6	RV302	F-2		
D14	E-2	IC301	J-2	RV303	B-2		
D101	D-5	IC302	H-2	RV401	H-4		
D102	C-5	IC303	F-2	RV402	F-4		
D103	D-5	IC304	E-2	RV403	B-3		
D104	C-5	IC305	D-2				
D105	C-5	IC401	J-4	S101	A-5		
D106	C-5	IC402	H-4	S201	A-6		
D107	C-5	IC403	F-4	S301	B-2		
D108	F-6	IC404	E-4	S401	B-4		
D109	G-6	IC405	D-4				
D201	C-6			TP1	E-7		
D202	C-6	Q1	K-6	TP2	E-7		
D203	C-6	Q2	K-6	TP3	E-6		
D204	C-6	Q3	G-5	TP4	E-6		
D205	C-6	Q4	K-4	TP5	J-6		
D206	C-7	Q5	K-4	TP6	K-6		
D207	C-7	Q6	L-5	TP7	K-7		
D208	F-6	Q7	L-5	TP8	L-7		
D209	G-6	Q8	L-4	TP9	L-6		
D301	E-2	Q9	L-4	TP10	L-6		
D401	E-4	Q10	L-4	TP11	L-6		
		Q11	L-4	TP12	H-5		
E1	F-6	Q101	C-5	TP13	K-5		
E2	J-7	Q102	C-6	TP14	H-5		
E3	A-2	Q103	C-5	TP15	H-6		
E4	A-4	Q201	C-7	TP16	L-6		
E5	F-3	Q202	C-7	TP103	E-5		
E6	E-5	Q203	D-6	TP203	E-6		
E7	G-6	Q301	F-1	TP301	H-1		
E8	H-1	Q302	C-1	TP302	F-2		
E9	H-3	Q303	D-1	TP303	E-2		
		Q304	C-2	TP304	A-1		
IC1	F-5	Q305	C-2	TP305	B-3		
IC2	K-2	Q306	D-2	TP401	H-3		
IC3	F-7	Q307	C-2	TP402	F-4		
IC4	F-6	Q401	F-4	TP403	E-4		

ADA-18 BOARD (PCM-7030)
(1-637-267-14)
Component Side

Serial No. UC 20116 to 25020
EK 50381 to 55040



D1	F-7
D2	F-7
D3	G-5
D4	E-6
D5	F-6
D8	K-7
D9	L-4
D10	L-4
D11	A-2
D12	A-4
D13	J-2
D14	E-2
D101	D-5
D102	C-5
D103	D-5
D104	C-5
D105	C-5
D106	C-5
D107	C-5
D108	F-6
D109	G-6
D201	C-6
D202	C-6
D203	C-6
D204	C-6
D205	C-6
D206	C-7
D207	C-7
D208	F-6
D209	G-6
D301	E-2
D401	E-4
E1	F-6
E2	J-7
E3	A-2
E4	A-4
E5	F-3
E6	E-5
E7	G-6
E8	H-1
E9	H-3
IC1	F-5
IC2	K-2
IC3	F-7
IC4	F-6



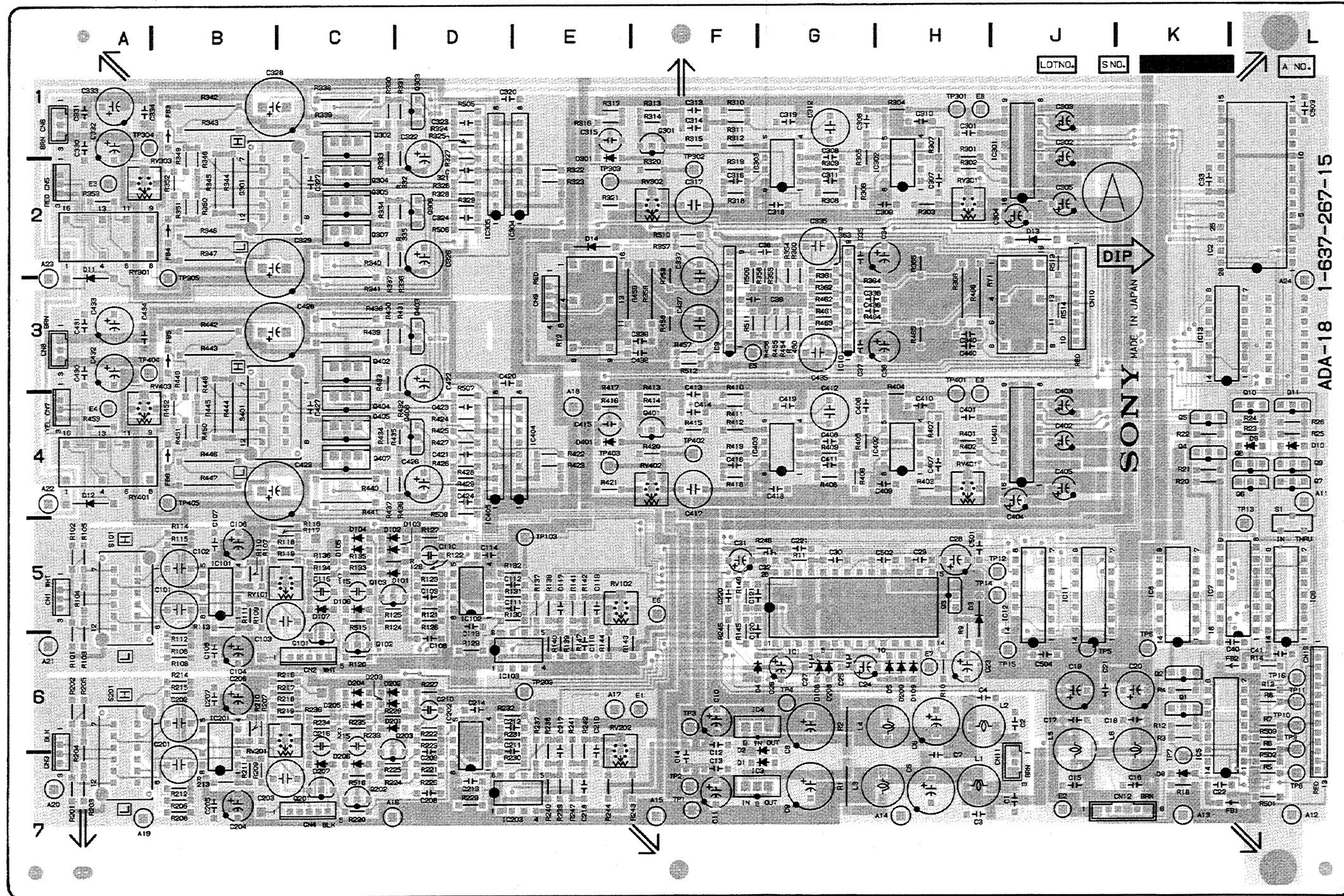
B-7(c)

D1	F-7	IC5	K-7	Q402	C-3	TP404	B-3
D2	F-7	IC6	K-5	Q403	D-3	TP405	B-4
D3	G-5	IC7	K-5	Q404	C-3		
D4	E-6	IC8	J-5	Q405	C-4		
D5	F-6	IC9	F-3	Q406	D-4		
D8	K-7	IC10	G-3	Q407	C-4		
D9	L-4	IC11	H-5				
D10	L-4	IC101	B-5	RV101	C-5		
D11	A-2	IC102	D-5	RV201	C-7		
D12	A-4	IC201	B-6	RV301	H-2		
D13	J-2	IC202	D-6	RV302	F-2		
D14	E-2	IC301	J-2	RV303	B-2		
D101	D-5	IC302	H-2	RV401	H-4		
D102	C-5	IC303	F-2	RV402	F-4		
D103	D-5	IC304	E-2	RV403	B-3		
D104	C-5	IC305	D-2				
D105	C-5	IC401	J-4	S101	A-5		
D106	C-5	IC402	H-4	S201	A-6		
D107	C-5	IC403	F-4	S301	B-2		
D108	F-6	IC404	E-4	S401	B-4		
D109	G-6	IC405	D-4				
D201	C-6			TP1	E-7		
D202	C-6	Q1	K-6	TP2	E-7		
D203	C-6	Q2	K-6	TP3	E-6		
D204	C-6	Q3	G-5	TP4	E-6		
D205	C-6	Q4	K-4	TP5	J-6		
D206	C-7	Q5	K-4	TP6	K-6		
D207	C-7	Q6	L-5	TP7	K-7		
D208	F-6	Q7	L-5	TP8	L-7		
D209	G-6	Q8	L-4	TP9	L-6		
D301	E-2	Q9	L-4	TP10	L-6		
D401	E-4	Q10	L-4	TP11	L-6		
		Q11	L-4	TP12	H-5		
E1	F-6	Q101	C-5	TP13	K-5		
E2	J-7	Q102	C-6	TP14	H-5		
E3	A-2	Q103	C-5	TP15	H-6		
E4	A-4	Q201	C-7	TP16	L-6		
E5	F-3	Q202	C-7	TP103	E-5		
E6	E-5	Q203	D-6	TP203	E-6		
E7	G-6	Q301	F-1	TP301	H-1		
E8	H-1	Q302	C-1	TP302	F-2		
E9	H-3	Q303	D-1	TP303	E-2		
		Q304	C-2	TP304	A-1		
IC1	F-5	Q305	C-2	TP305	B-3		
IC2	K-2	Q306	D-2	TP401	H-3		
IC3	F-7	Q307	C-2	TP402	F-4		
IC4	F-6	Q401	F-4	TP403	E-4		

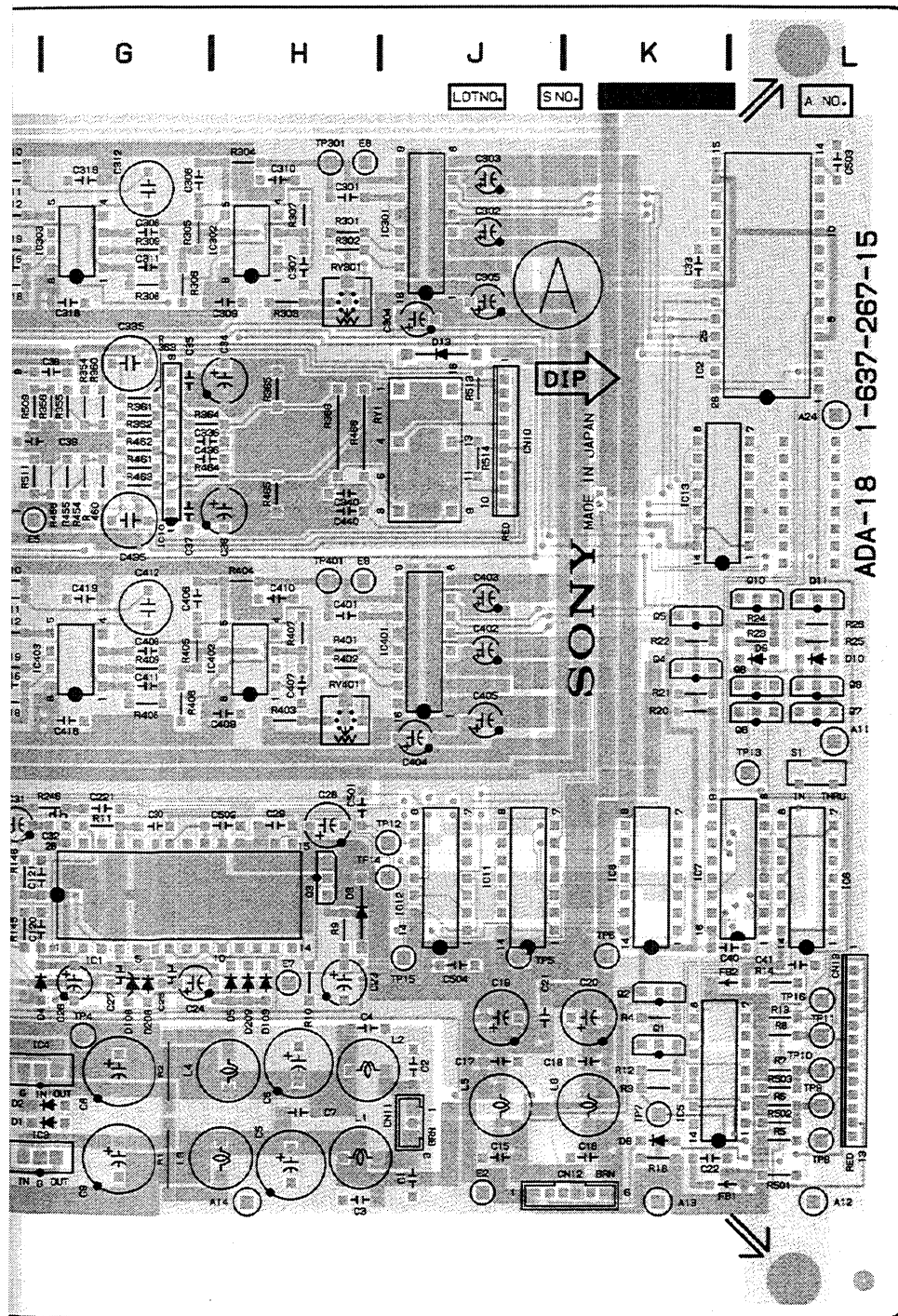
B-8(c)

ADA-18 BOARD (PCM-7030)
(1-637-267-15)
Component Side

Serial No. UC 25021 and higher
EK 55041 and higher



SOLDER SIDE PATTERN 1-637-267-15



B-7(d)

D1	F-7	IC5	K-7	Q305	C-2	TP302	F-2
D2	F-7	IC6	L-5	Q306	D-2	TP303	E-2
D3	H-5	IC7	K-5	Q307	C-2	TP304	A-1
D4	F-6	IC8	K-5	Q401	F-4	TP305	B-3
D5	H-6	IC9	F-3	Q402	C-3	TP401	H-3
D8	K-7	IC10	G-3	Q403	D-3	TP402	F-4
D9	L-4	IC11	H-5	Q404	C-3	TP403	E-4
D10	L-4	IC12	H-5	Q405	C-4	TP404	B-3
D11	A-2	IC13	K-3	Q406	D-4	TP405	B-4
D12	A-4	IC101	B-5	Q407	C-4		
D13	J-2	IC102	D-5				
D14	E-2	IC103	E-6	RV101	C-5		
D101	D-5	IC201	B-6	RV102	E-5		
D102	C-5	IC202	D-6	RV201	C-7		
D103	D-5	IC203	E-7	RV202	E-7		
D104	C-5	IC301	J-2	RV301	H-2		
D105	C-5	IC302	H-2	RV302	F-2		
D106	C-5	IC303	G-2	RV303	B-2		
D107	C-5	IC304	E-2	RV401	H-4		
D108	G-6	IC305	D-2	RV402	F-4		
D109	H-6	IC401	J-4	RV403	B-3		
D201	C-6	IC402	H-4				
D202	C-6	IC403	G-4	S1	L-5		
D203	C-6	IC404	E-4	S101	A-5		
D204	C-6	IC405	D-4	S201	A-6		
D205	C-6			S301	B-2		
D206	C-7	Q1	K-6	S401	B-4		
D207	C-7	Q2	K-6				
D208	G-6	Q3	H-5	TP1	F-7		
D209	H-6	Q4	K-4	TP2	F-7		
D301	E-2	Q5	K-4	TP3	F-6		
D401	E-4	Q6	L-4	TP4	G-6		
		Q7	L-4	TP5	J-6		
		Q8	L-4	TP6	K-6		
		Q9	L-4	TP7	K-7		
		Q10	L-4	TP8	L-7		
		Q11	L-4	TP9	L-6		
		Q101	C-5	TP10	L-6		
		Q102	C-6	TP11	L-6		
		Q103	C-5	TP12	H-5		
		Q201	C-7	TP13	L-5		
		Q202	C-7	TP14	H-5		
		Q203	D-6	TP15	J-6		
		Q301	F-1	TP16	L-6		
		Q302	C-1	TP103	E-5		
		Q303	D-1	TP203	E-6		
		Q304	C-2	TP301	H-1		
IC1	G-5						
IC2	K-2						
IC3	F-7						
IC4	F-6						

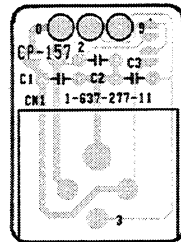
B-8(d)

CP-157A/158/171

CP-172A/172B

CP-157A BOARD (PCM-7030)
(1-637-277-11)
Component Side

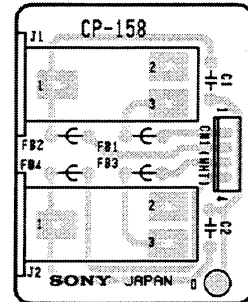
Serial No. UC 20001 to 20045
EK 50001 to 50200



SOLDER SIDE PATTERN 1-637-277-11

CP-158 BOARD (PCM-7030)
(1-637-282-12)
Component Side

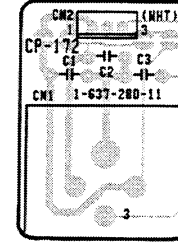
Serial No. UC 20001 to 20045
EK 50001 to 50200



SOLDER SIDE PATTERN 1-637-282-12

CP-172A BOARD (PCM-7030)
(1-637-280-11)
Component Side

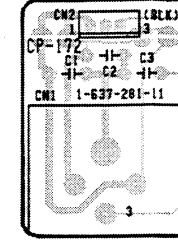
Serial No. UC 20001 to 20045
EK 50001 to 50200



SOLDER SIDE PATTERN 1-637-280-11

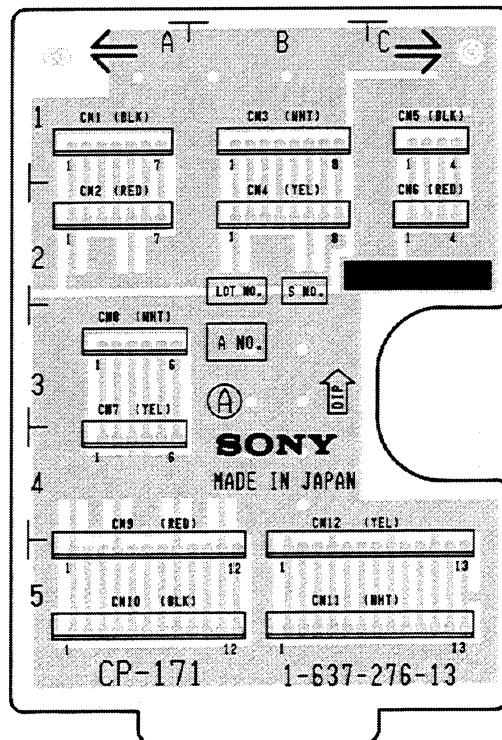
CP-172B BOARD (PCM-7030)
(1-637-281-11)
Component Side

Serial No. UC 20001 to 20045
EK 50001 to 50200



SOLDER SIDE PATTERN 1-637-281-11

CP-171 BOARD (PCM-7030)
(1-637-276-13)
Component Side



B-11(a)

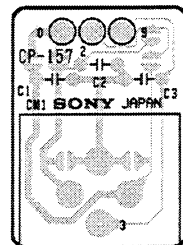
B-12(a)

CP-157A/158

CP-172A/172B

CP-157A BOARD (PCM-7030)
(1-637-277-13)
Component Side

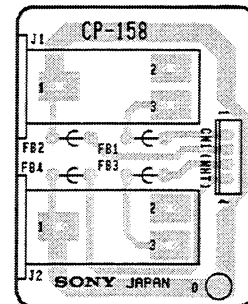
Serial No. UC 20046 and higher
EK 50201 and higher



SOLDER SIDE PATTERN 1-637-277-13

CP-158 BOARD (PCM-7030)
(1-637-282-14)
Component Side

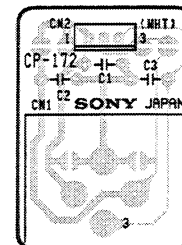
Serial No. UC 20046 and higher
EK 50201 and higher



SOLDER SIDE PATTERN 1-637-282-14

CP-172A BOARD (PCM-7030)
(1-637-280-13)
Component Side

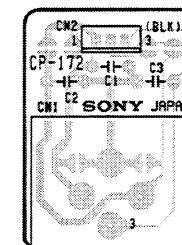
Serial No. UC 20046 and higher
EK 50201 and higher



SOLDER SIDE PATTERN 1-637-280-13

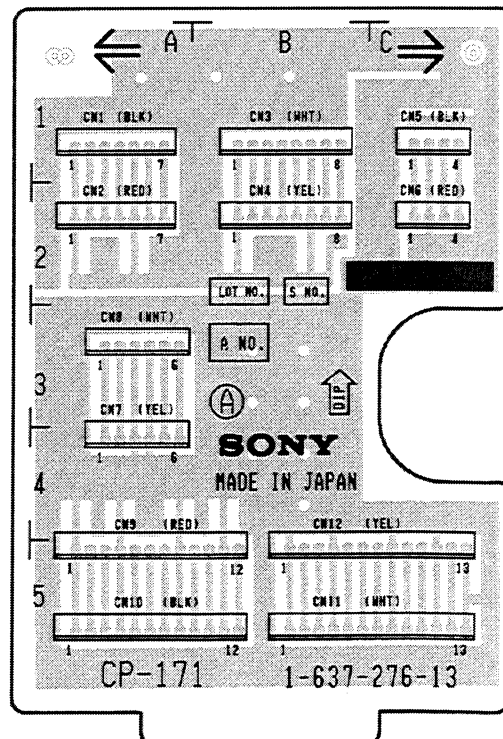
CP-172B BOARD (PCM-7030)
(1-637-281-13)
Component Side

Serial No. UC 20046 and higher
EK 50201 and higher



SOLDER SIDE PATTERN 1-637-281-13

CP-171 BOARD (PCM-7030)
(1-637-276-13)
Component Side

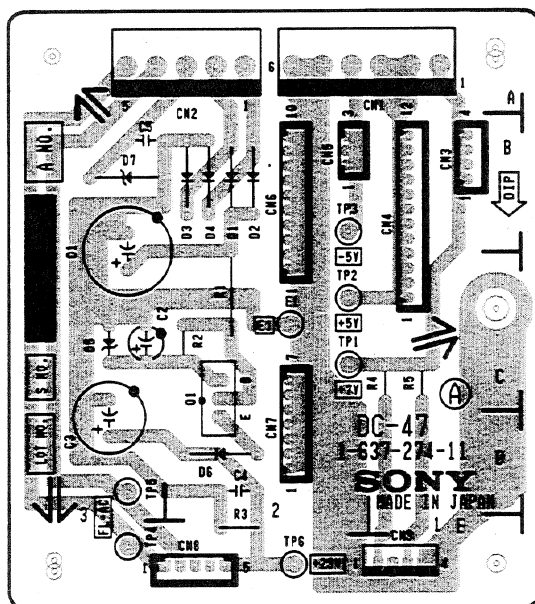


SOLDER SIDE PATTERN 1-637-276-13

B-11(b)

B-12(b)

DC-47 BOARD (PCM-7030)
 (1-637-274-11)
 Component Side



SOLDER SIDE PATTERN 1-637-274-11

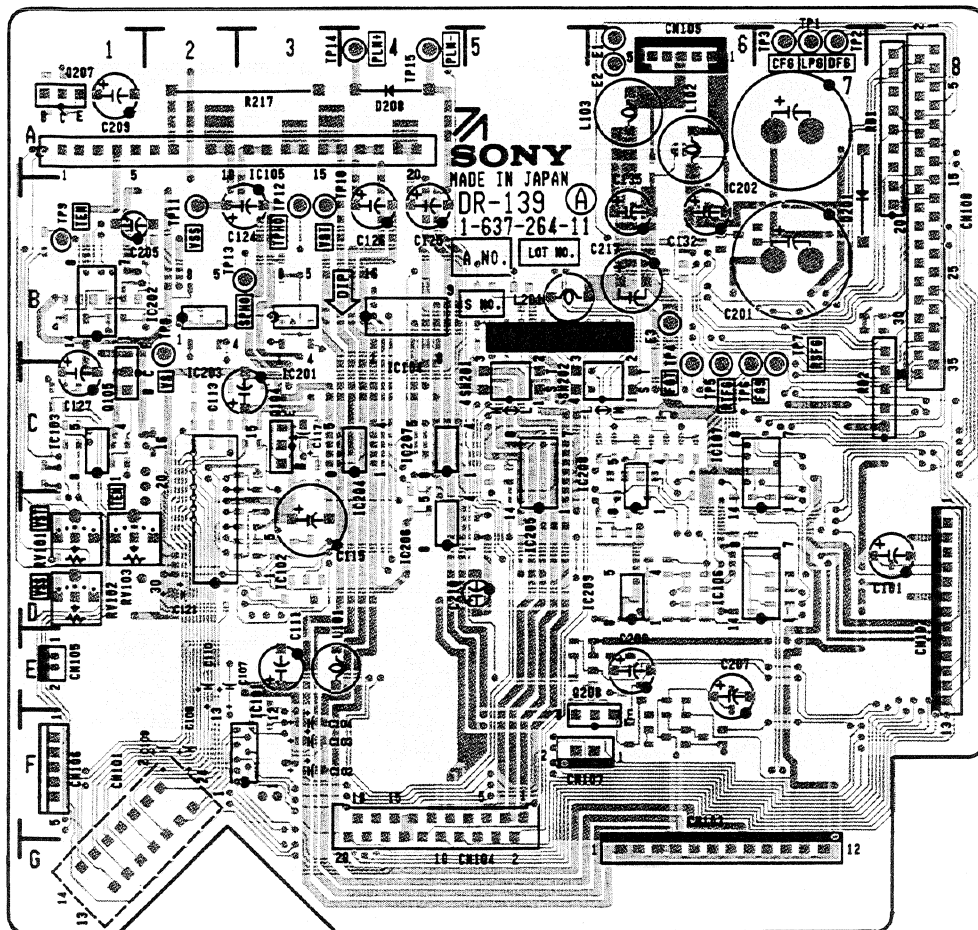
D1	B-2
D2	B-2
D3	B-2
D4	B-2
D5	C-3
D6	D-2
D7	B-3
E1	C-2
Q1	C-2
TP1	C-2
TP2	C-2
TP3	B-2
TP4	E-3
TP5	D-3
TP6	E-2



DR-139, HP-48

DR-139 BOARD (PCM-7030)
(1-637-264-11)
Component Side

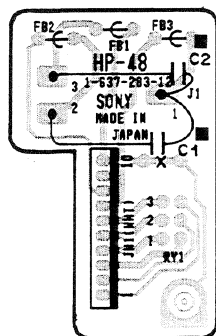
Serial No. UC 20001 to 20045
EK 50001 to 50200



SOLDER SIDE PATTERN 1-637-264-11

HP-48 BOARD (PCM-7030)
(1-637-283-12)
Component Side

Serial No. UC 20001 to 20045
EK 50001 to 50200



SOLDER SIDE PATTERN 1-637-283-12

Applied Serial No. UC 20001 to 20045 EK 50001 to 50200	
Jumpers that have been cut.	CN1-10 → GND
Parts marked with * that have been installed on the solder side.	* C1 * C2

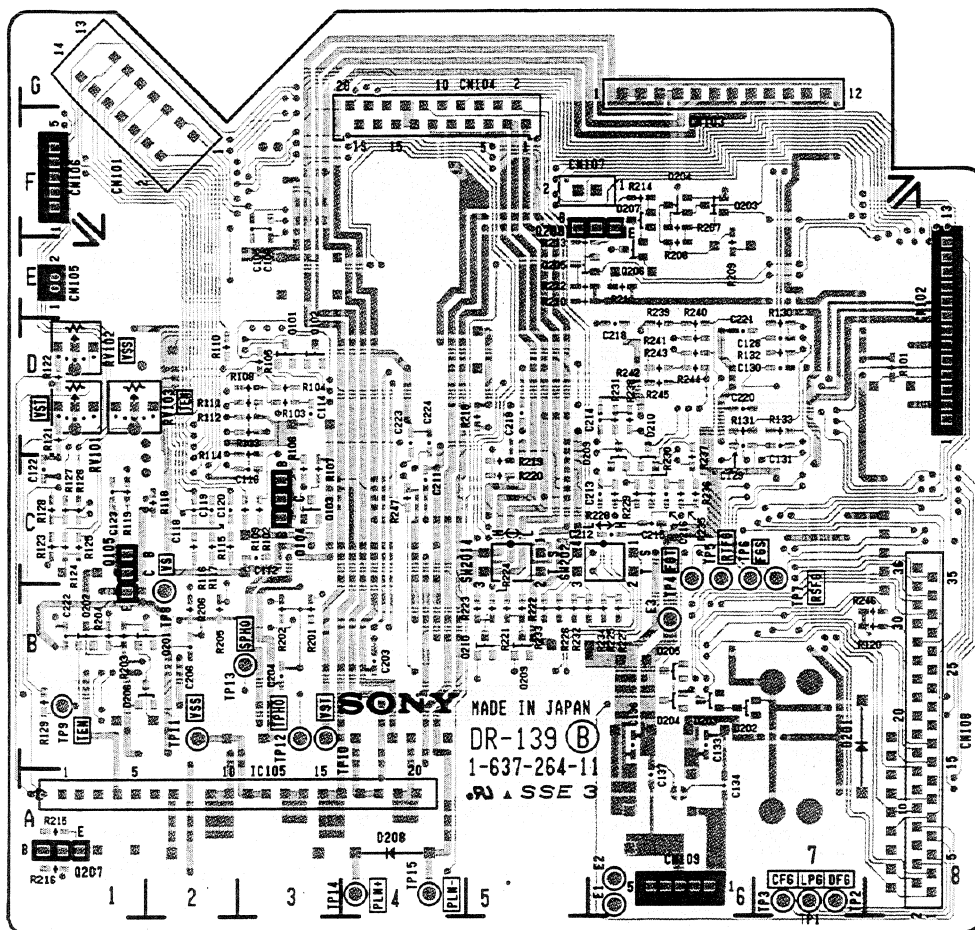
D201	B-7
D208	A-4
E1	A-6
E2	A-6
E3	B-6
IC101	F-3
IC102	D-3
IC103	C-1
IC104	C-4
IC105	A-3
IC106	D-6
IC107	C-6
IC201	C-3
IC202	B-2
IC203	C-2
IC204	D-4
IC205	D-5
IC206	D-4
IC207	C-4
IC208	C-5
IC209	D-5
Q104	C-3
Q105	C-1
Q207	A-1
Q208	E-5
RV101	D-1
RV102	D-1
RV103	D-1
SW201	C-5
SW202	C-5
TP1	A-7
TP2	A-7
TP3	A-7
TP4	C-6
TP5	C-6
TP6	C-6
TP7	B-7
TP8	B-2
TP9	B-1
TP10	B-3
TP11	B-2
TP12	B-3
TP13	B-2
TP14	A-3
TP15	A-4



DR-139

DR-139 BOARD (PCM-7030)
(1-637-264-11)
Solder Side

Serial No. UC 20001 to 20045
EK 50001 to 50200



D 202	B-6
D 203	B-6
D 204	B-6
D 205	B-6
D 206	B-1
D 207	F-6
D 209	C-6
D 210	D-6
Q 101	D-3
Q 102	D-3
Q 103	C-3
Q 201	B-2
Q 202	B-1
Q 203	F-6
Q 204	F-6
Q 205	E-5
Q 206	E-6
Q 209	B-5
Q 210	B-5

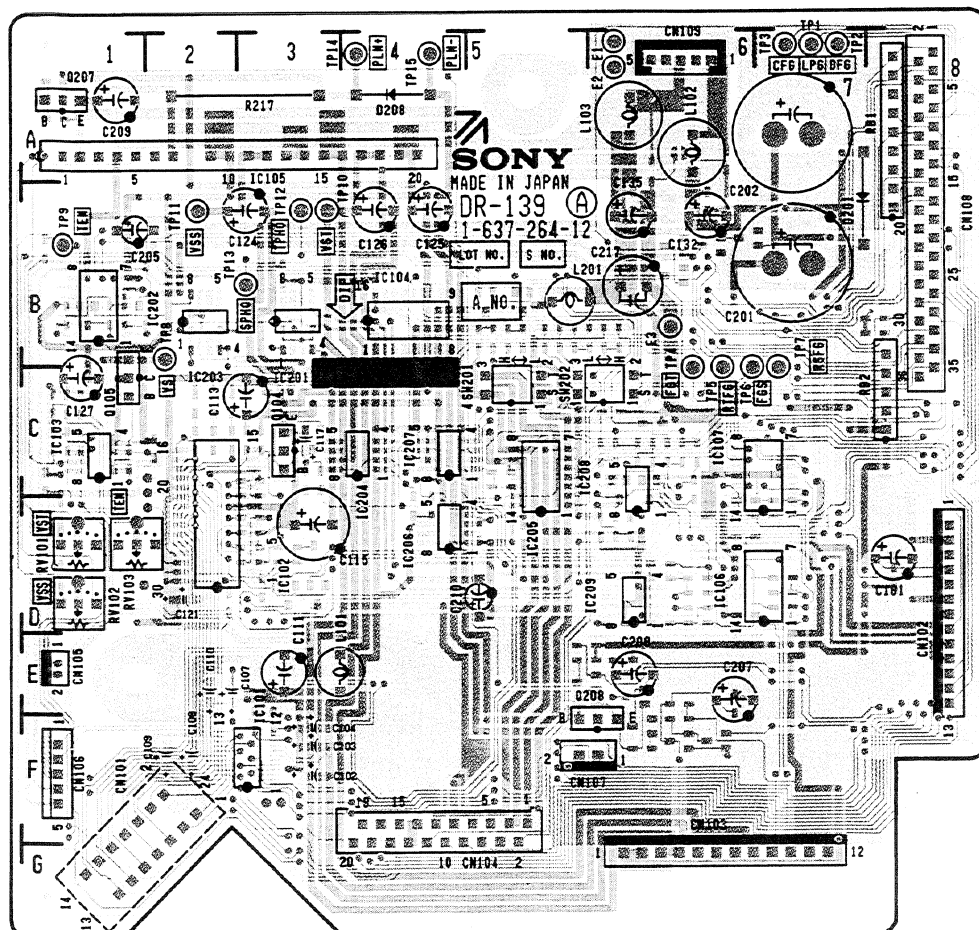
SOLDER SIDE PATTERN

1-637-264-11

DR-139, HP-48

DR-139 BOARD (PCM-7030) (1-637-264-12) Component Side

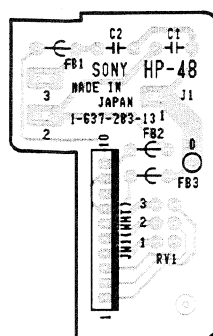
Serial No. UC 20046 to 25180
EK 50201 to 55040



SOLDER SIDE PATTERN 1-637-264-12
PC BOARD PATTERN 1-637-264-12

HP-48 BOARD (PCM-7030) (1-637-283-13) Component Side

Serial No. UC 20046 and higher
EK 50201 and higher



SOLDER SIDE PATTERN 1-637-283-13

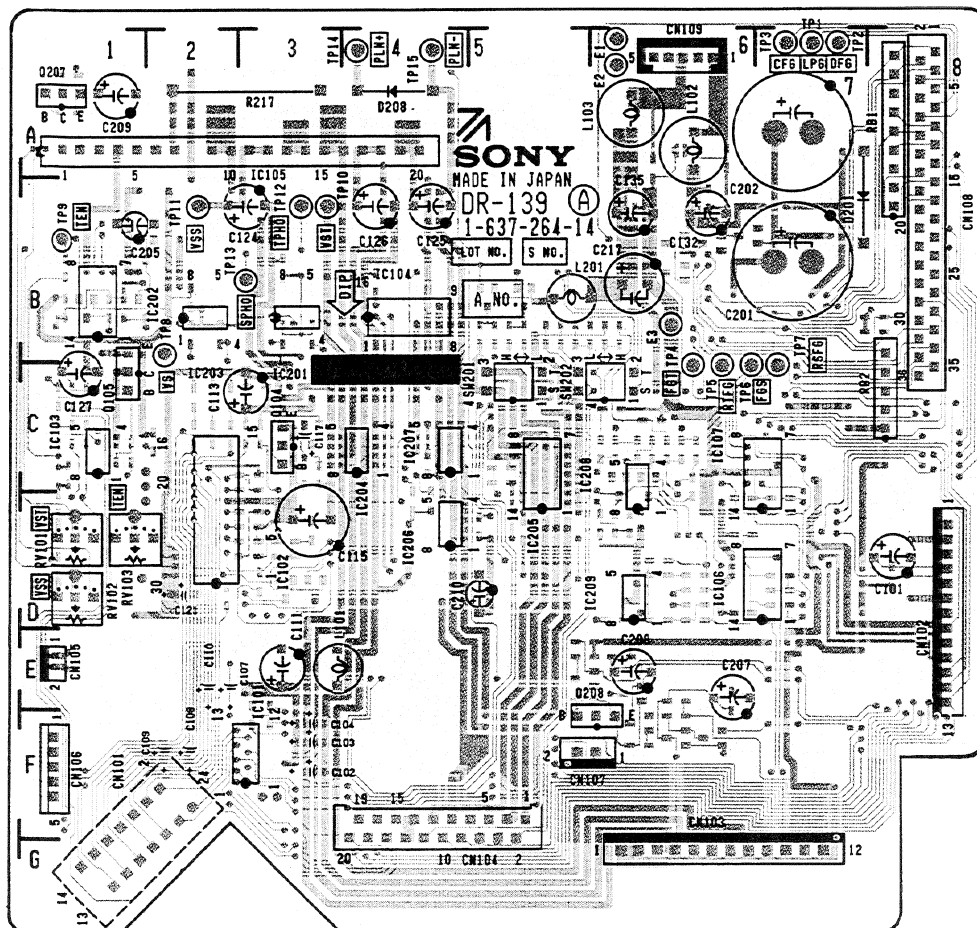
D201	B-7
D208	A-4
E1	A-6
E2	A-6
E3	B-6
IC101	F-3
IC102	D-3
IC103	C-1
IC104	C-4
IC105	A-3
IC106	D-6
IC107	C-6
IC201	C-3
IC202	B-2
IC203	C-2
IC204	D-4
IC205	D-5
IC206	D-4
IC207	C-4
IC208	C-5
IC209	D-5
Q104	C-3
Q105	C-1
Q207	A-1
Q208	E-5
RV101	D-1
RV102	D-1
RV103	D-1
SW201	C-5
SW202	C-5
TP1	A-7
TP2	A-7
TP3	A-7
TP4	C-6
TP5	C-6
TP6	C-6
TP7	B-7
TP8	B-2
TP9	B-1
TP10	B-3
TP11	B-2
TP12	B-3
TP13	B-2
TP14	A-3
TP15	A-4



DR-139, HP-48

DR-139 BOARD (PCM-7030)
(1-637-264-14)
Component Side

Serial No. UC 25181 and higher
EK 55041 and higher

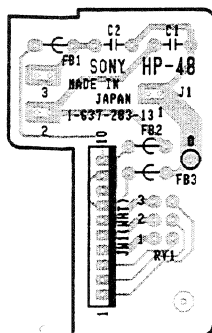


SOLDER SIDE PATTERN

1-637-264-14

HP-48 BOARD (PCM-7030)
(1-637-283-13)
Component Side

Serial No. UC 20046 and higher
EK 50201 and higher

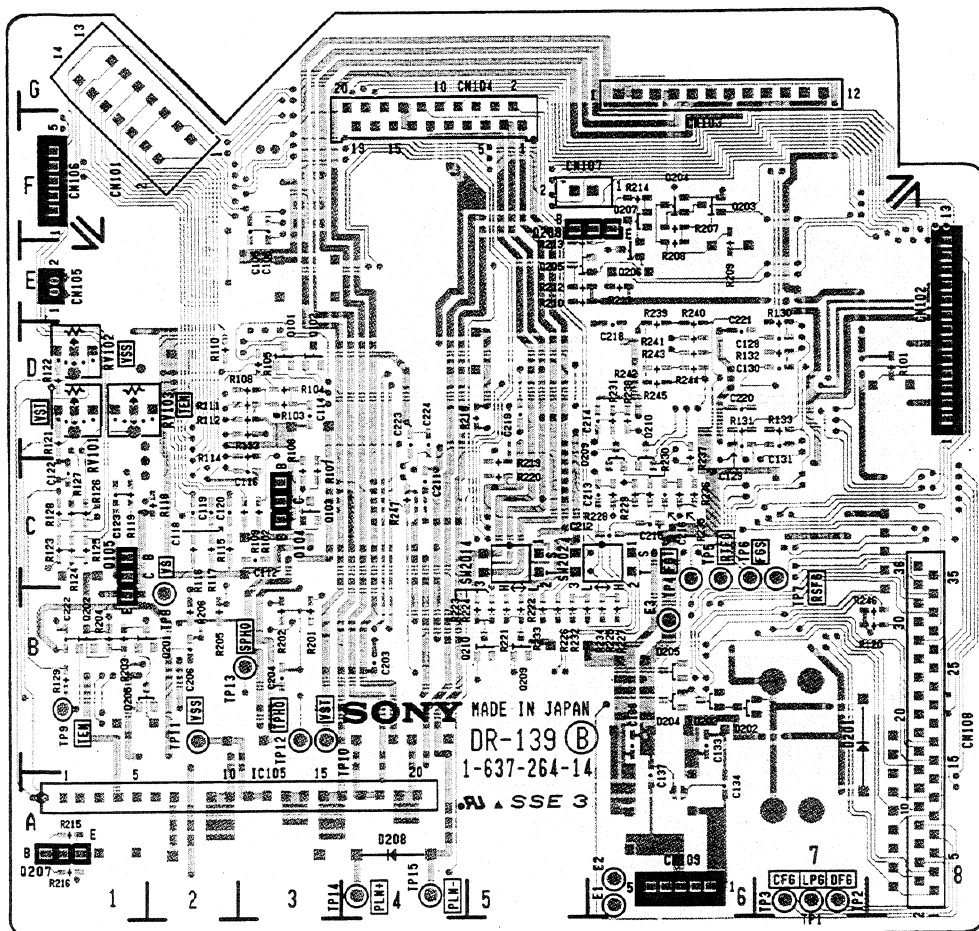


SOLDER SIDE PATTERN

1-637-283-13

D201	B-7
D208	A-4
E1	A-6
E2	A-6
E3	B-6
IC101	F-3
IC102	D-3
IC103	C-1
IC104	B-4
IC105	A-3
IC106	D-6
IC107	C-6
IC201	C-3
IC202	B-2
IC203	C-2
IC204	D-4
IC205	D-5
IC206	D-4
IC207	C-4
IC208	C-5
IC209	D-5
Q104	C-3
Q105	C-1
Q207	A-1
Q208	E-5
RV101	D-1
RV102	D-1
RV103	D-1
SW201	C-5
SW202	C-5
TP1	A-7
TP2	A-7
TP3	A-7
TP4	C-6
TP5	C-6
TP6	C-6
TP7	B-7
TP8	B-2
TP9	B-1
TP10	B-3
TP11	B-2
TP12	B-3
TP13	B-2
TP14	A-3
TP15	A-4

Serial No.	UC 25181 and higher
	EK 55041 and higher

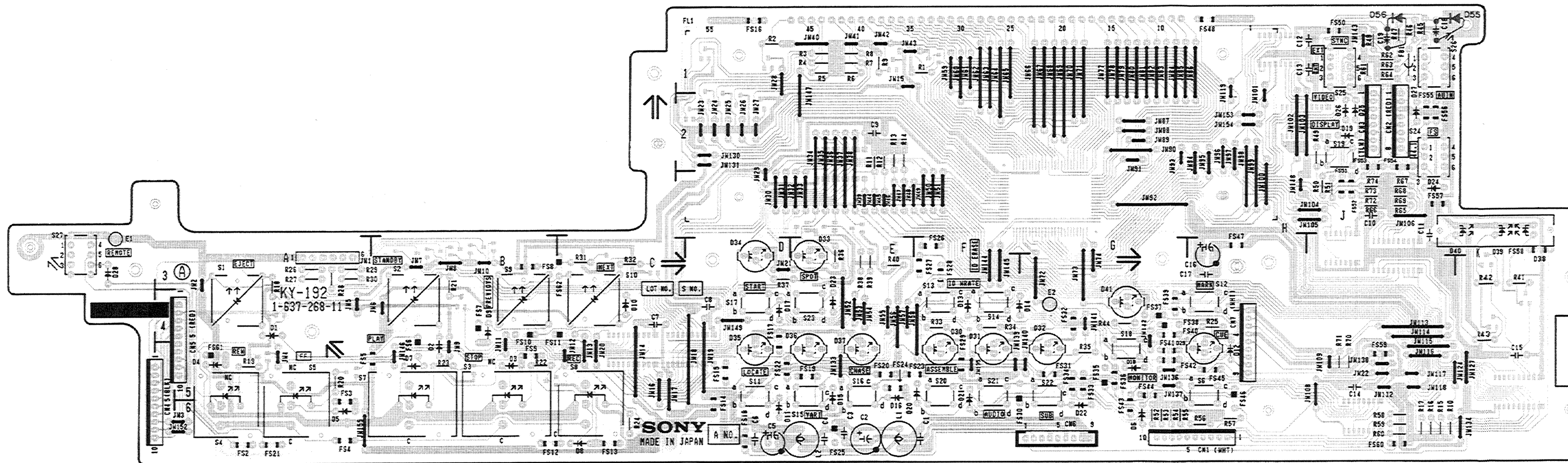


1-637-264-14

D 202	B-6
D 203	B-6
D 204	B-6
D 205	B-6
D 207	F-6
D 209	C-6
D 210	D-6
Q 101	D-3
Q 102	D-3
Q 103	C-3
Q 201	B-2
Q 202	B-1
Q 203	F-6
Q 204	F-6
Q 205	E-5
Q 206	E-6
Q 209	B-5
Q 210	B-5

KY-192 BOARD (PCM-7030)
(1-637-268-11)
Component Side

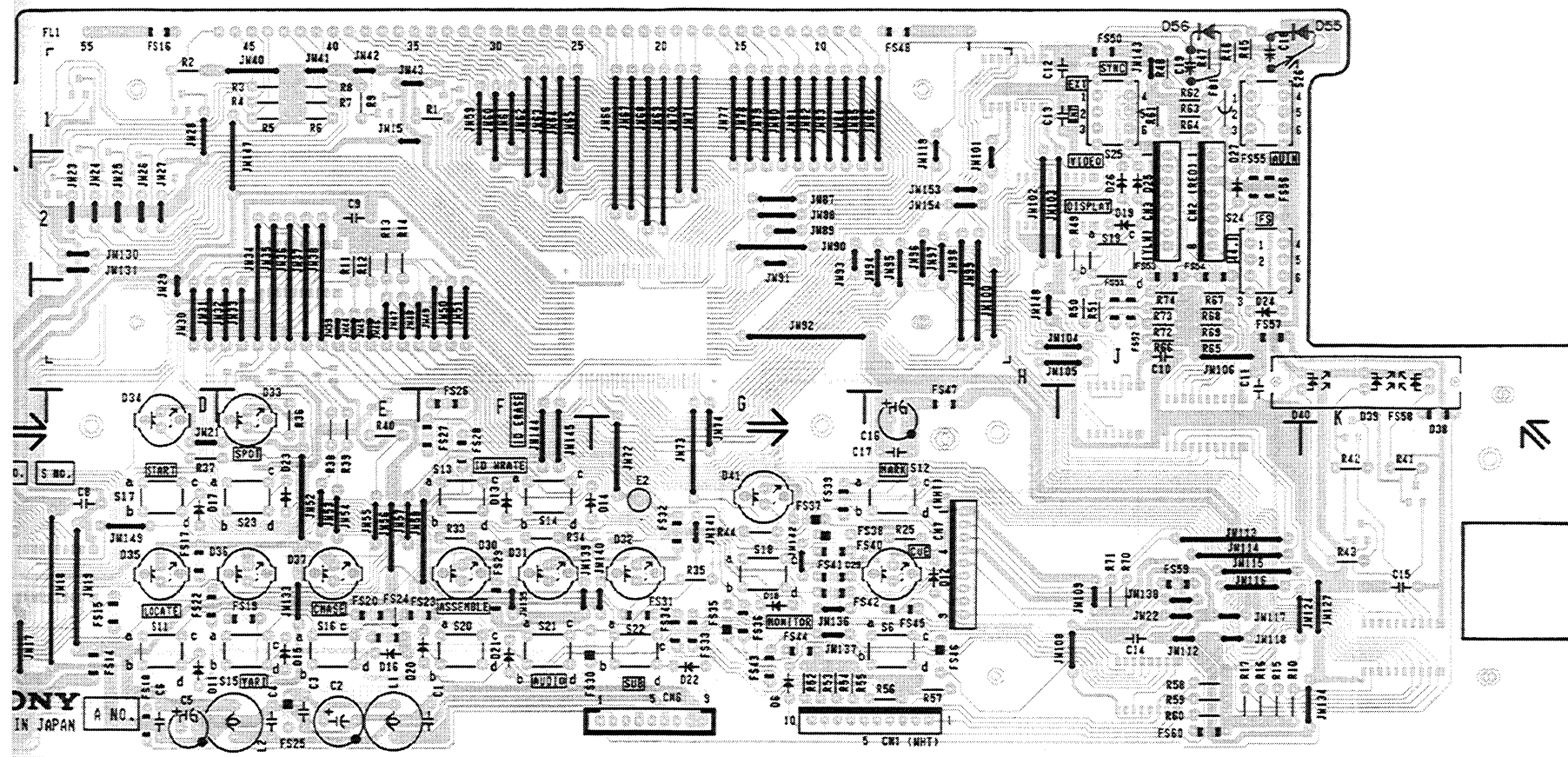
Serial No.	UC 20001 to 20045
	EK 50001 to 50200



SOLDER SIDE PATTERN 1-637-258-11

Applied Serial No. UC 20001 to 20045
EX 50001 to 50200

Parts that have been changed.	C18 → D55 C19 → D56
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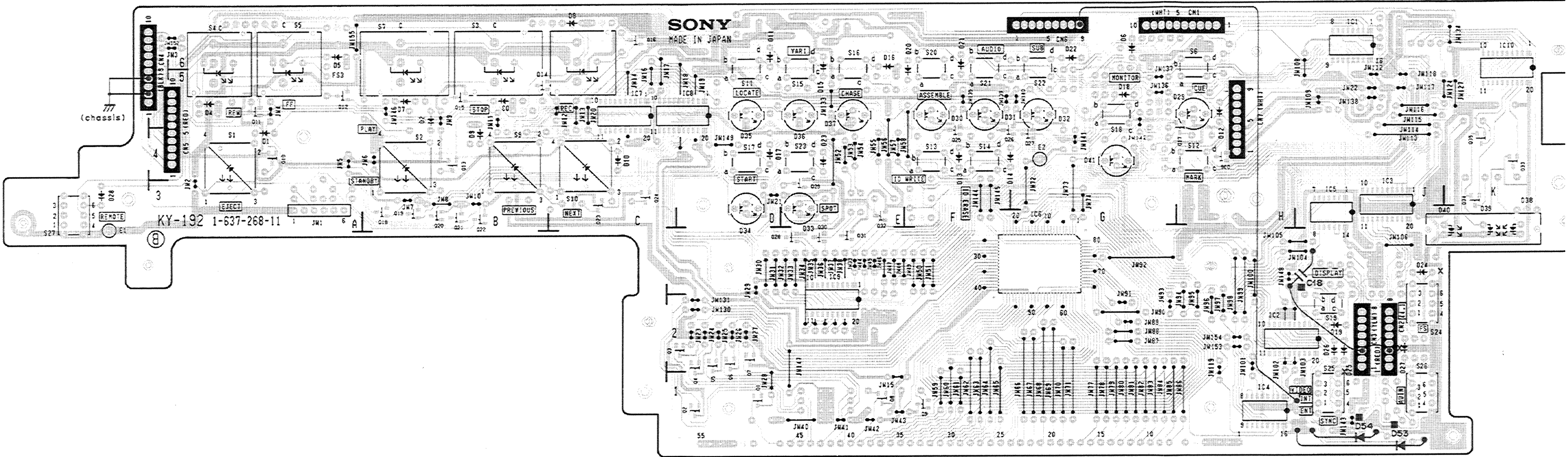
Applied Serial No. UC 20001 to 20045
EK 50001 to 50200

Parts that have
been changed. C18 → D55
C19 → D56

D1	A-4	S3	B-5
D2	B-5	S4	A-6
D3	B-5	S5	A-5
D4	A-5	S6	H-5
D5	A-6	S7	A-5
D6	G-6	S8	C-5
D7	B-5	S9	B-3
D8	C-6	S10	C-3
D9	B-4	S11	D-5
D10	C-4	S12	H-3
D11	D-6	S13	F-3
D12	H-5	S14	F-4
D13	F-4	S15	E-5
D14	G-4	S16	E-5
D15	E-5	S17	D-4
D16	E-5	S18	G-4
D17	D-4	S19	J-2
D18	G-5	S20	F-5
D19	J-2	S21	F-5
D20	F-5	S22	G-5
D21	F-5	S23	E-4
D22	G-6	S24	J-2
D23	E-3	S25	J-1
D24	J-3	S26	J-1
D25	J-2	S27	A-3
D26	J-2		
D27	J-2		
D28	A-3		
D29	G-5		
D30	F-4		
D31	F-4		
D32	G-4		
D33	E-3		
D34	D-3		
D35	D-4		
D36	E-4		
D37	E-4		
D38	K-3		
D39	K-3		
D40	K-3		
D41	G-4		
E1	A-3		
E2	G-4		
S1	A-3		
S2	B-3		

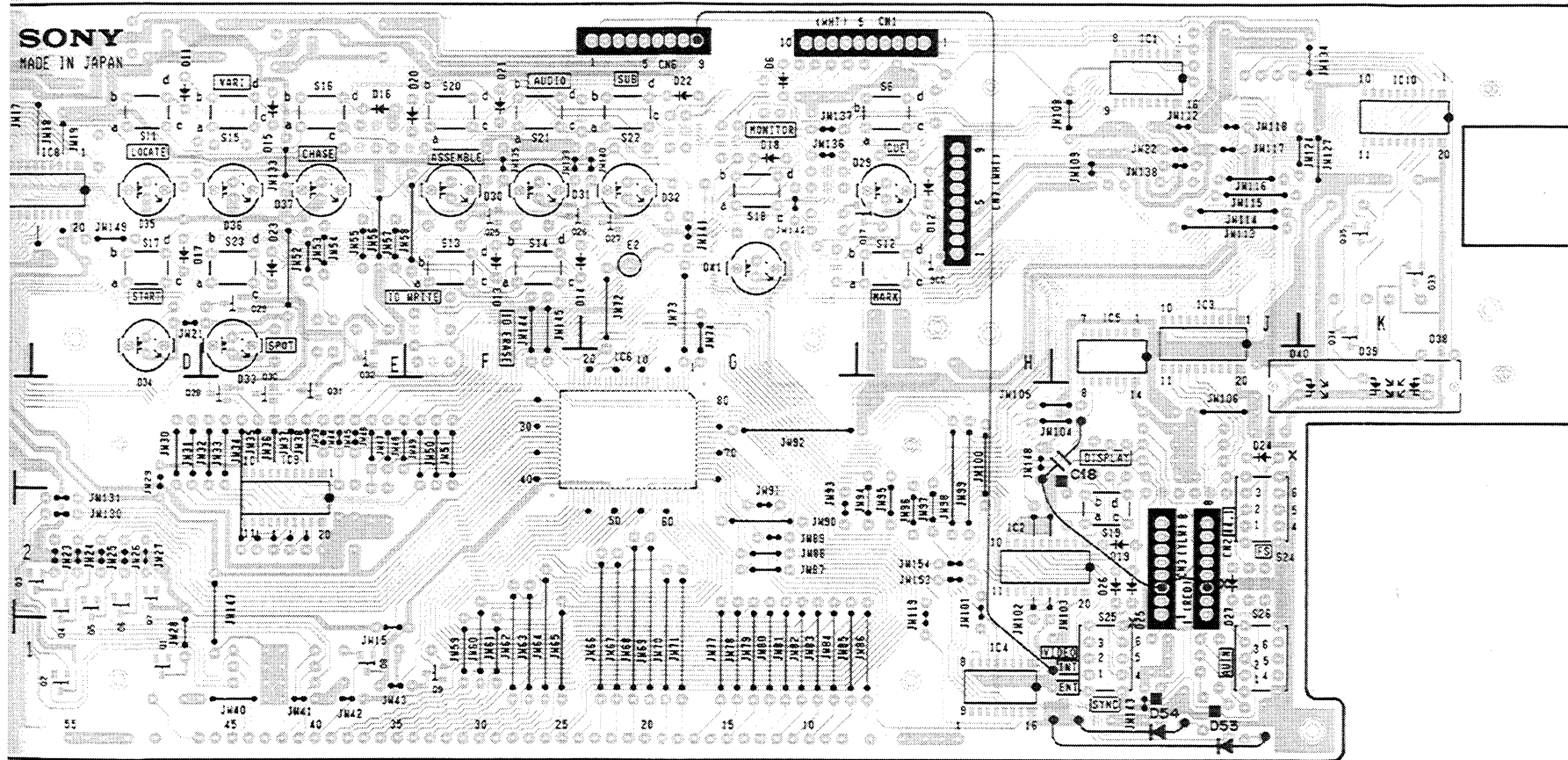
KY-192 BOARD (PCM-7030)
(1-637-268-11)
Solder Side

Serial No. UC 20001 to 20045
EK 50001 to 50200



SOLDER SIDE PATTERN 1-637-268-11

Applied Serial No. UC 20001 to 20045 EK 50001 to 50200		
Jumpers that have been soldered or cut.	CN2-3 ☒ GND CN3-3 ☒ GND D40 cathode ☒ GND	CN2-3 CN3-3 CN4-2 C13
Parts marked with * that have been installed on the solder side.	* D59 * D54 * C18	

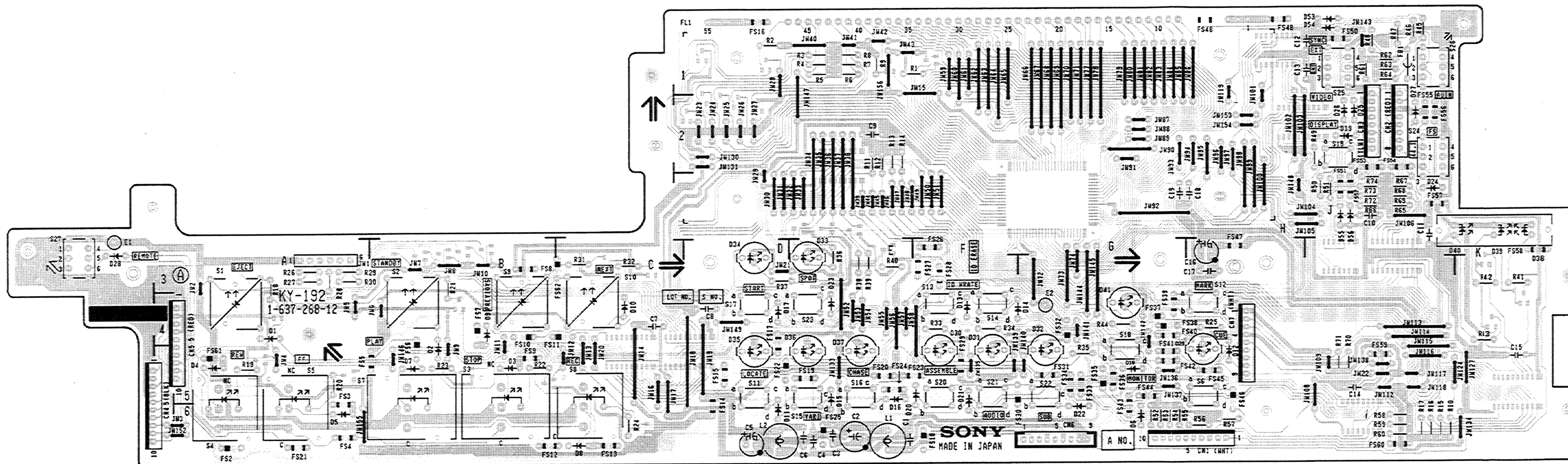


Applied Serial No. UC 20001 to 20045 EK 50001 to 50200			
Jumpers that have been soldered or cut.	CN2-3	✗ GND	CN2-3 — CN3-3
	CN3-3	✗ GND	CN3-3 — JW148
	D40 cathode	✗ GND	CN4-2,4 — Chassis
Parts marked with * that have been installed on the solder side.			C13 — CN5-9

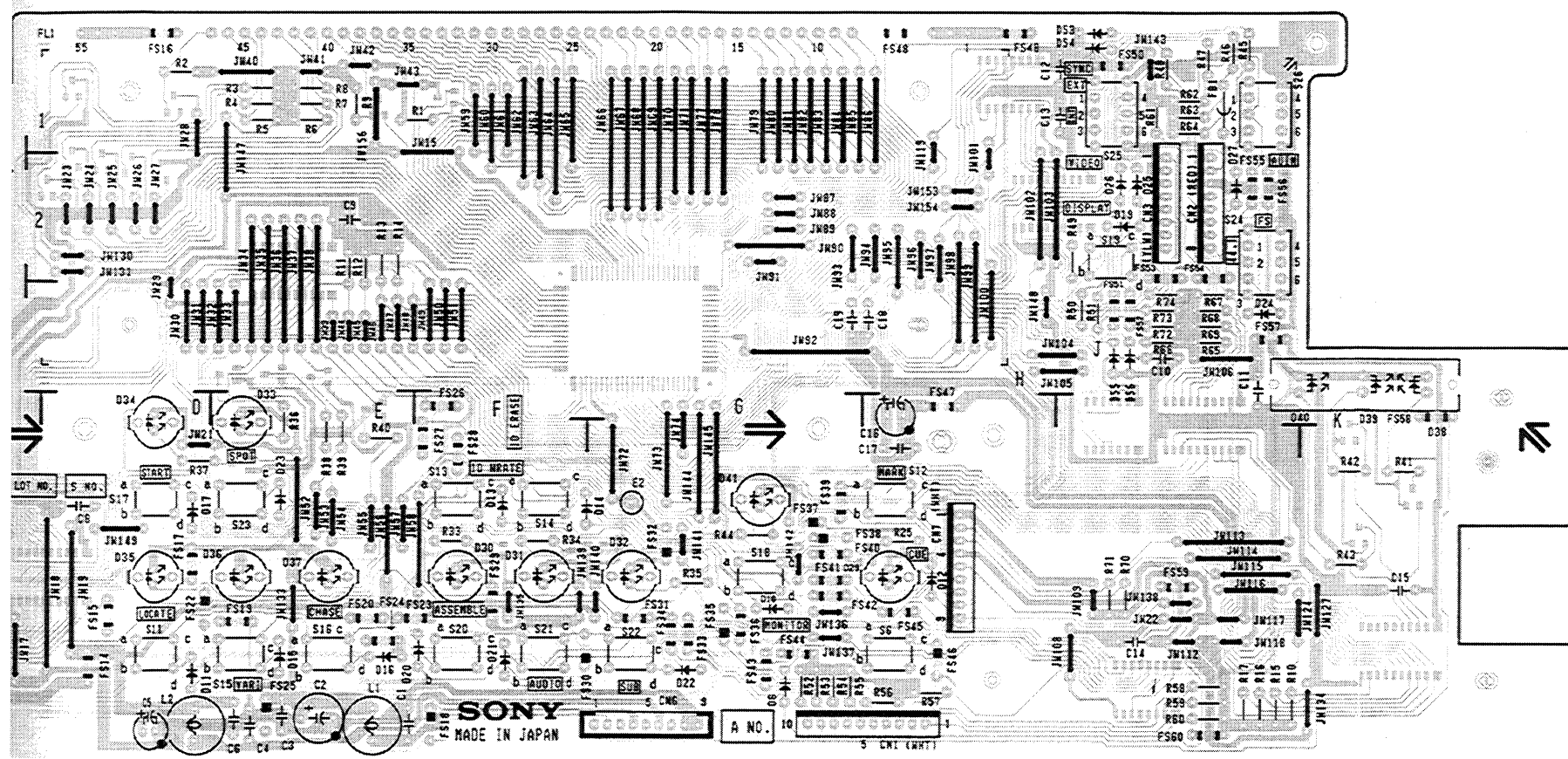
D1	A-4	IC3	J-3	S2	B-3
D2	B-5	IC4	H-1	S3	B-5
D3	B-5	IC5	J-3	S4	A-6
D4	A-5	IC6	G-3	S5	A-5
D5	A-6	IC7	C-5	S6	H-5
D6	G-6	IC8	D-5	S7	A-5
D7	B-5	IC9	E-3	S8	C-5
D8	C-6	IC10	K-6	S9	B-3
D9	B-4			S10	C-3
D10	C-4	Q1	D-1	S11	D-5
D11	D-6	Q2	D-1	S12	H-3
D12	H-5	Q3	C-2	S13	F-3
D13	F-4	Q4	D-1	S14	F-4
D14	G-4	Q5	D-1	S15	E-5
D15	E-5	Q6	D-1	S16	E-5
D16	E-5	Q7	D-1	S17	D-4
D17	D-4	Q8	E-1	S18	G-4
D18	G-5	Q9	F-1	S19	J-2
D19	J-2	Q10	A-4	S20	F-5
D20	F-5	Q11	A-5	S21	F-5
D21	F-5	Q12	A-5	S22	G-5
D22	G-6	Q13	B-4	S23	E-4
D23	E-3	Q14	B-5	S24	J-2
D24	J-3	Q15	B-5	S25	J-1
D25	J-2	Q16	C-6	S26	J-1
D26	J-2	Q17	H-4	S27	A-3
D27	J-2	Q18	B-3		
D28	A-3	Q19	B-3		
D29	G-5	Q20	B-3		
D30	F-4	Q21	B-3		
D31	F-4	Q22	B-3		
D32	G-4	Q23	C-3		
D33	E-3	Q24	C-3		
D34	D-3	Q25	F-4		
D35	D-4	Q26	G-4		
D36	E-4	Q27	G-4		
D37	E-4	Q28	D-3		
D38	K-3	Q29	E-3		
D39	K-3	Q30	E-3		
D40	K-3	Q31	E-3		
D41	G-4	Q32	E-3		
		Q33	K-4		
E1	A-3	Q34	K-3		
E2	G-4	Q35	K-4		
		Q36	H-4		
IC1	J-6				
IC2	H-2	S1	A-3		

KY-192 BOARD (PCM-7030)
(1-637-268-12)
Component Side

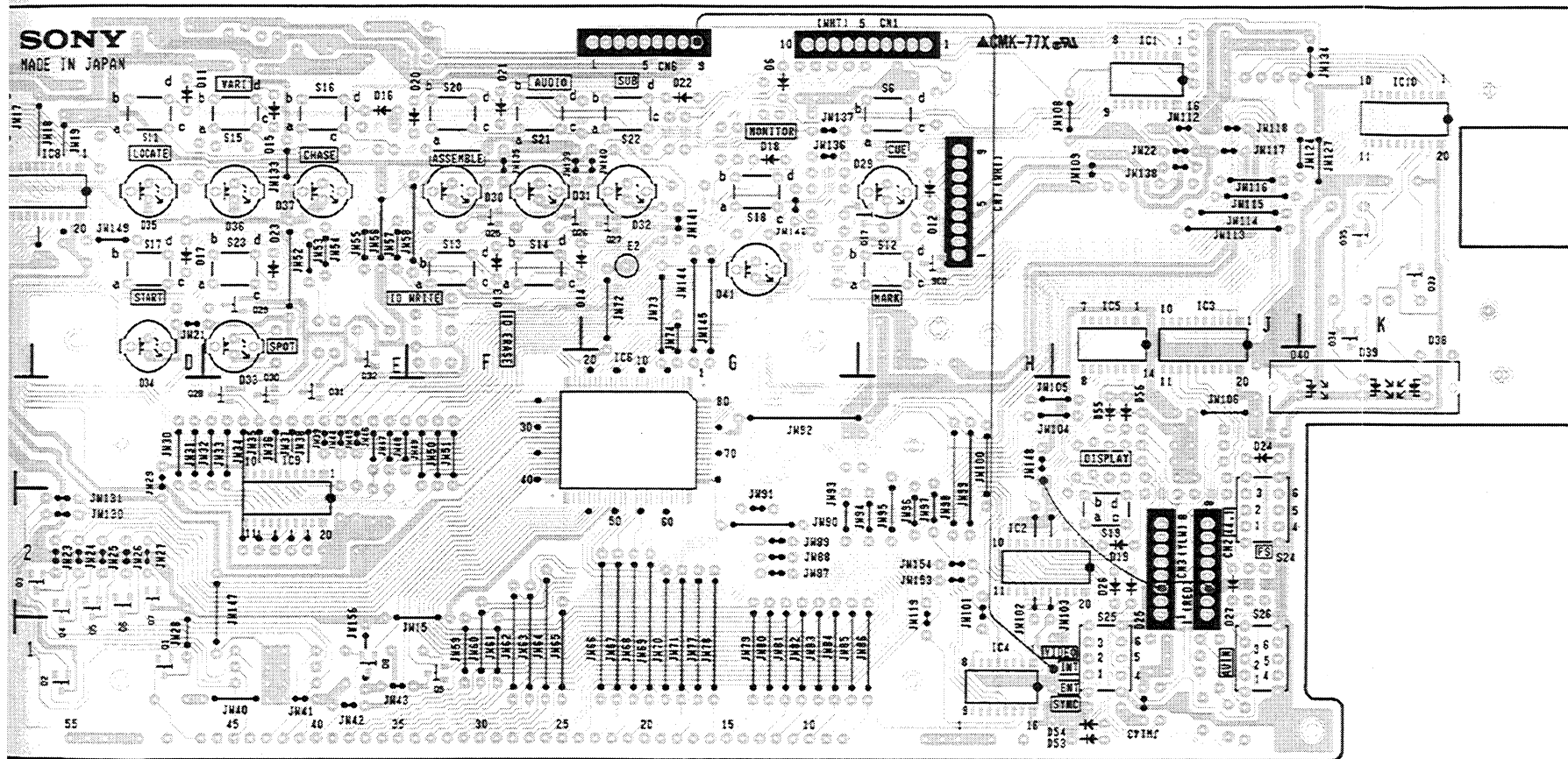
Serial No. UC 20046 to 20115
EK 50201 to 50580



SOLDER SIDE PATTERN 1-637-268-12
PC BOARD (WHT) 5 CM (WHT)



D1	A-4	S3	B-5
D2	B-5	S4	A-6
D3	B-5	S5	A-5
D4	A-5	S6	H-5
D5	A-6	S7	A-5
D6	G-6	S8	C-5
D7	B-5	S9	B-3
D8	C-6	S10	C-3
D9	B-4	S11	D-5
D10	C-4	S12	H-3
D11	D-6	S13	F-3
D12	H-5	S14	F-4
D13	F-4	S15	E-5
D14	G-4	S16	E-5
D15	E-5	S17	D-4
D16	E-5	S18	G-4
D17	D-4	S19	J-2
D18	G-5	S20	F-5
D19	J-2	S21	F-5
D20	F-5	S22	G-5
D21	F-5	S23	E-4
D22	G-6	S24	J-2
D23	E-3	S25	J-1
D24	J-3	S26	J-1
D25	J-2	S27	A-3
D26	J-2		
D27	J-2		
D28	A-3		
D29	G-5		
D30	F-4		
D31	F-4		
D32	G-4		
D33	E-3		
D34	D-3		
D35	D-4		
D36	E-4		
D37	E-4		
D38	K-3		
D39	K-3		
D40	K-3		
D41	G-4		
E1	A-3		
E2	G-4		
S1	A-3		
S2	B-3		

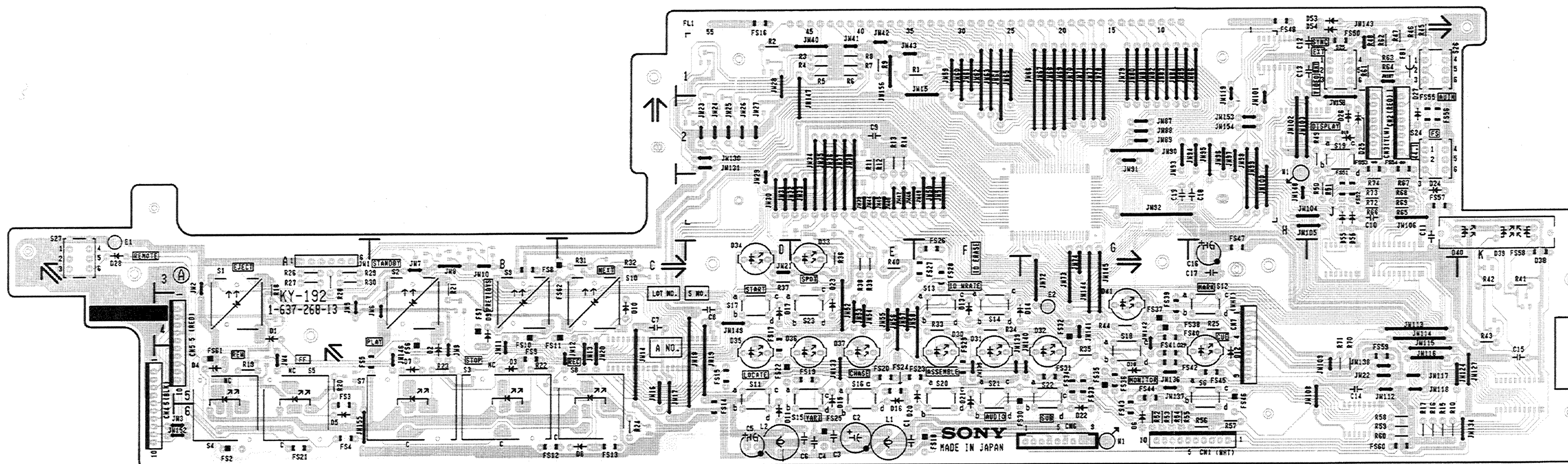


Applied Serial No. UC 20046 to 20115 EK 50201 to 50580	
Jumpers that have been soldered:	CN2-3 — CN3-3 CN3-3 — JW148 C13 — CN6-9

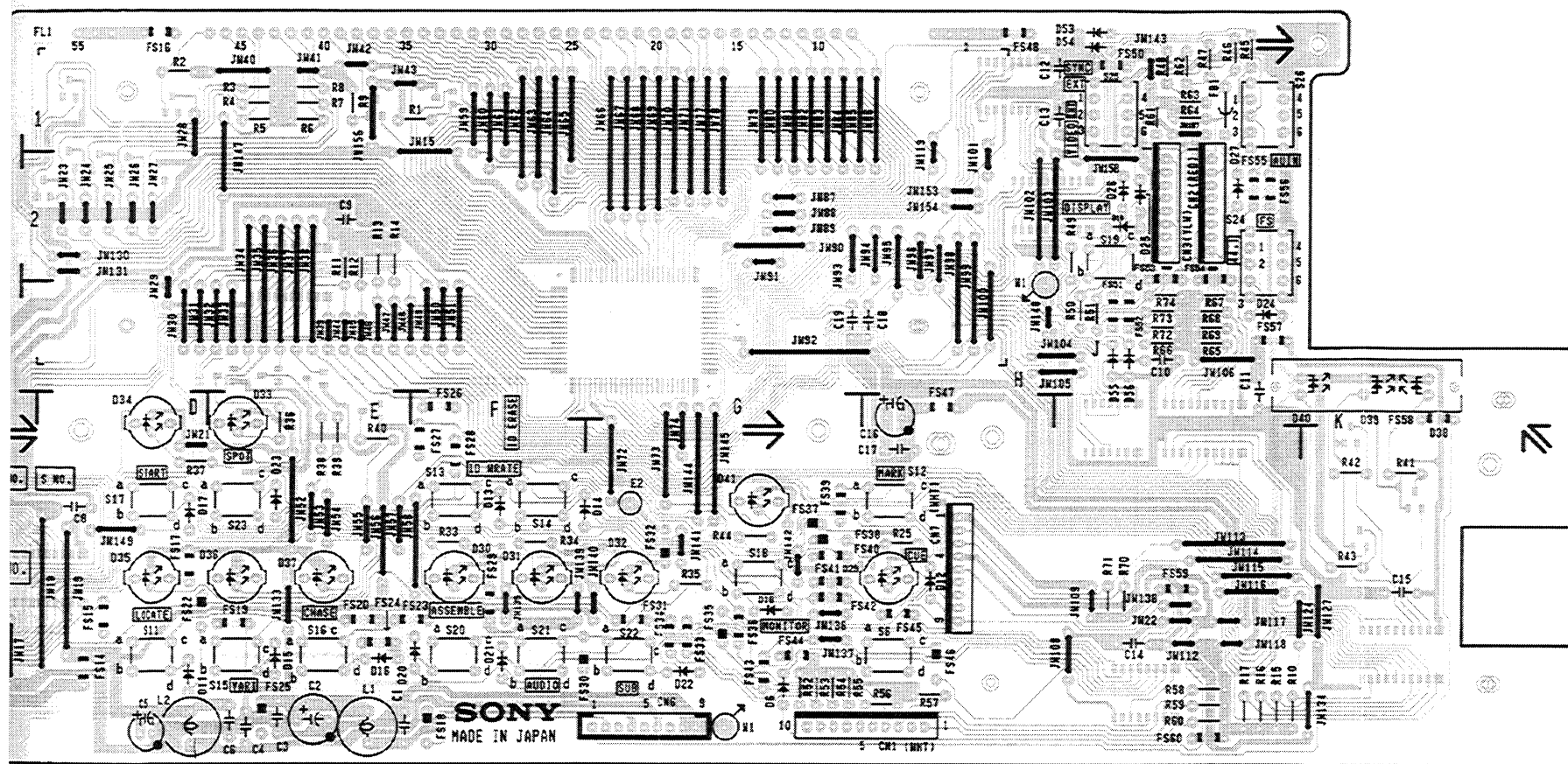
D1	A-4	IC3	J-3	S2	B-3
D2	B-5	IC4	H-1	S3	B-5
D3	B-5	IC5	J-3	S4	A-6
D4	A-5	IC6	G-3	S5	A-5
D5	A-6	IC7	O-5	S6	H-5
D6	G-6	IC8	D-5	S7	A-5
D7	B-5	IC9	E-3	S8	C-5
D8	C-6	IC10	K-6	S9	B-3
D9	B-4			S10	C-3
D10	C-4	Q1	D-1	S11	D-5
D11	D-6	Q2	D-1	S12	H-3
D12	H-5	Q3	C-2	S13	F-3
D13	F-4	Q4	D-1	S14	F-4
D14	G-4	Q5	D-1	S15	E-5
D15	E-5	Q6	D-1	S16	E-5
D16	E-5	Q7	D-1	S17	D-4
D17	D-4	Q8	E-1	S18	G-4
D18	G-5	Q9	F-1	S19	J-2
D19	J-2	Q10	A-4	S20	F-5
D20	F-5	Q11	A-5	S21	F-5
D21	F-5	Q12	A-5	S22	G-5
D22	G-6	Q13	B-4	S23	E-4
D23	E-3	Q14	B-5	S24	J-2
D24	J-3	Q15	B-5	S25	J-1
D25	J-2	Q16	C-6	S26	J-1
D26	J-2	Q17	H-4	S27	A-3
D27	J-2	Q18	B-3		
D28	A-3	Q19	B-3		
D29	G-5	Q20	B-3		
D30	F-4	Q21	B-3		
D31	F-4	Q22	B-3		
D32	G-4	Q23	C-3		
D33	E-3	Q24	C-3		
D34	D-3	Q25	F-4		
D35	D-4	Q26	G-4		
D36	E-4	Q27	G-4		
D37	E-4	Q28	D-3		
D38	K-3	Q29	E-3		
D39	K-3	Q30	E-3		
D40	K-3	Q31	E-3		
D41	G-4	Q32	E-3		
		Q33	K-4		
E1	A-3	Q34	K-3		
E2	G-4	Q35	K-4		
		Q36	H-4		
IC1	J-6				
IC2	H-2	S1	A-3		

KY-192 BOARD (PCM-7030)
(1-637-268-13)
Component Side

Serial No. UC 20116 and higher
EK 50581 and higher



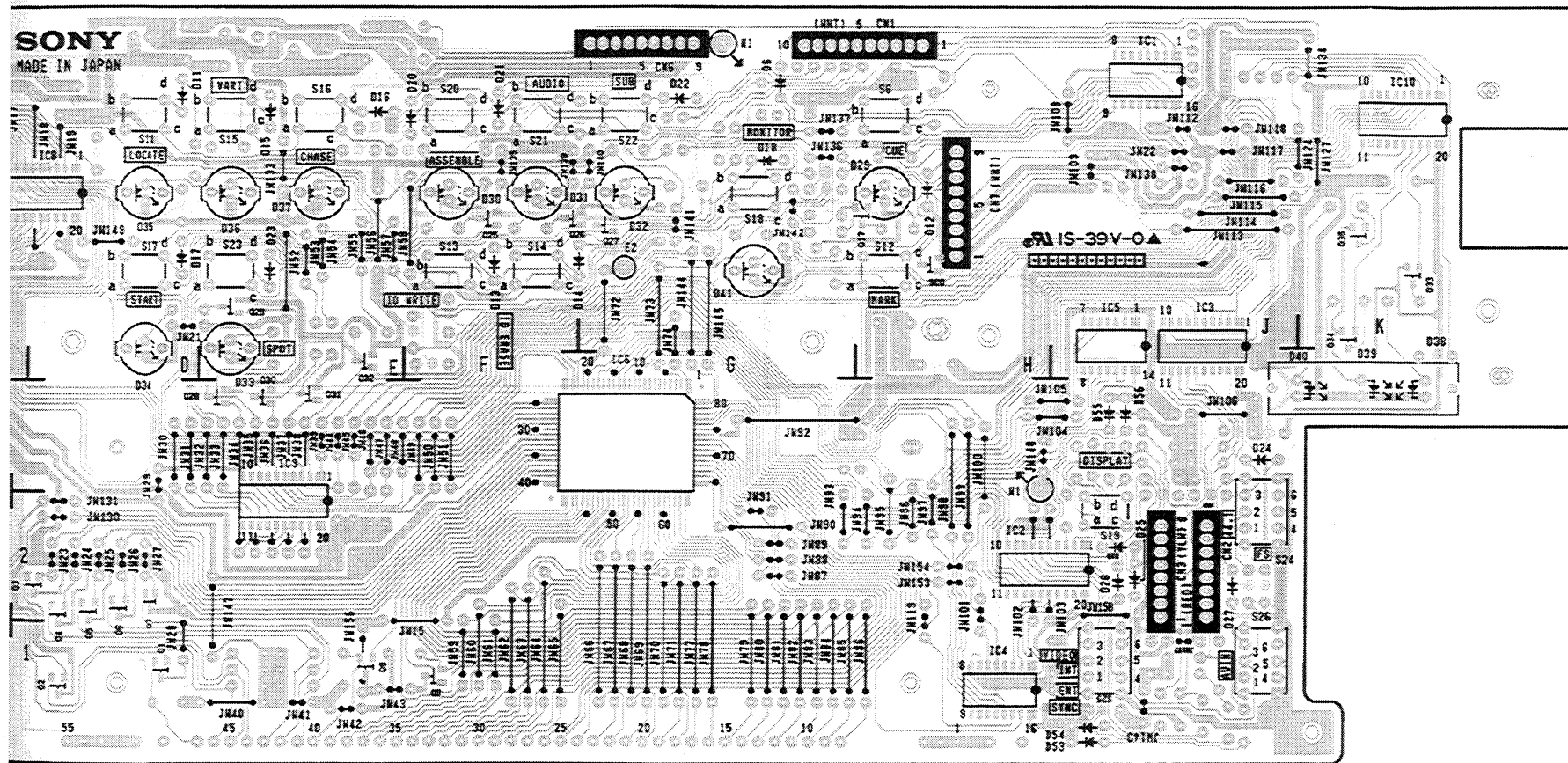
SOLDER SIDE PATTERN 1-637-268-13



D1	A-4	S3	B-5
D2	B-5	S4	A-6
D3	B-5	S5	A-6
D4	A-5	S6	H-5
D5	A-6	S7	A-5
D6	G-6	S8	C-5
D7	B-5	S9	B-3
D8	C-6	S10	C-3
D9	B-4	S11	D-5
D10	C-4	S12	H-3
D11	D-6	S13	F-3
D12	H-5	S14	F-4
D13	F-4	S15	E-5
D14	G-4	S16	E-5
D15	E-5	S17	D-4
D16	E-5	S18	G-4
D17	D-4	S19	J-2
D18	G-5	S20	F-5
D19	J-2	S21	F-5
D20	F-5	S22	G-5
D21	F-5	S23	E-4
D22	G-6	S24	J-2
D23	E-3	S25	J-1
D24	J-3	S26	J-1
D25	J-2	S27	A-3
D26	J-2		
D27	J-2		
D28	A-3		
D29	G-5		
D30	F-4		
D31	F-4		
D32	G-4		
D33	E-3		
D34	D-3		
D35	D-4		
D36	E-4		
D37	E-4		
D38	K-3		
D39	K-3		
D40	K-3		
D41	G-4		
E1	A-3		
E2	G-4		
S1	A-3		
S2	B-3		

Serial No.	UC 20116 and higher
	EK 50581 and higher

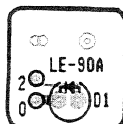




D1	A-4	IC3	J-3	S2	B-3
D2	B-5	IC4	H-1	S3	B-5
D3	B-5	IC5	J-3	S4	A-6
D4	A-5	IC6	G-3	S5	A-5
D5	A-6	IC7	C-5	S6	H-5
D6	G-6	IC8	D-5	S7	A-5
D7	B-5	IC9	E-3	S8	C-5
D8	C-6	IC10	K-6	S9	B-3
D9	B-4			S10	C-3
D10	C-4	Q1	D-1	S11	D-5
D11	D-6	Q2	D-1	S12	H-3
D12	H-5	Q3	C-2	S13	F-3
D13	F-4	Q4	D-1	S14	F-4
D14	G-4	Q5	D-1	S15	E-5
D15	E-5	Q6	D-1	S16	E-5
D16	E-5	Q7	D-1	S17	D-4
D17	D-4	Q8	E-1	S18	G-4
D18	G-5	Q9	F-1	S19	J-2
D19	J-2	Q10	A-4	S20	F-5
D20	F-5	Q11	A-5	S21	F-5
D21	F-5	Q12	A-5	S22	G-5
D22	G-6	Q13	B-4	S23	E-4
D23	E-3	Q14	B-5	S24	J-2
D24	J-3	Q15	B-5	S25	J-1
D25	J-2	Q16	C-6	S26	J-1
D26	J-2	Q17	H-4	S27	A-3
D27	J-2	Q18	B-3		
D28	A-3	Q19	B-3		
D29	G-5	Q20	B-3		
D30	F-4	Q21	B-3		
D31	F-4	Q22	B-3		
D32	G-4	Q23	C-3		
D33	E-3	Q24	C-3		
D34	D-3	Q25	F-4		
D35	D-4	Q26	G-4		
D36	E-4	Q27	G-4		
D37	E-4	Q28	D-3		
D38	K-3	Q29	E-3		
D39	K-3	Q30	E-3		
D40	K-3	Q31	E-3		
D41	G-4	Q32	E-3		
		Q33	K-4		
E1	A-3	Q34	K-3		
E2	G-4	Q35	K-4		
		Q36	H-4		
IC1	J-6				
IC2	H-2	S1	A-3		

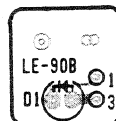
LE-90A/90B, LED-104

LE-90A BOARD (PCM-7030)
(1-637-285-12)
Component Side



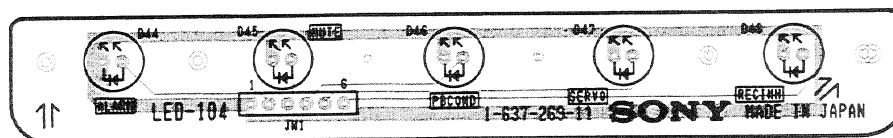
SOLDER SIDE PATTERN 1-637-285-12

LE-90B BOARD (PCM-7030)
(1-637-286-12)
Component Side



SOLDER SIDE PATTERN 1-637-286-12

LED-104 BOARD (PCM-7030)
(1-637-269-11)
Component Side

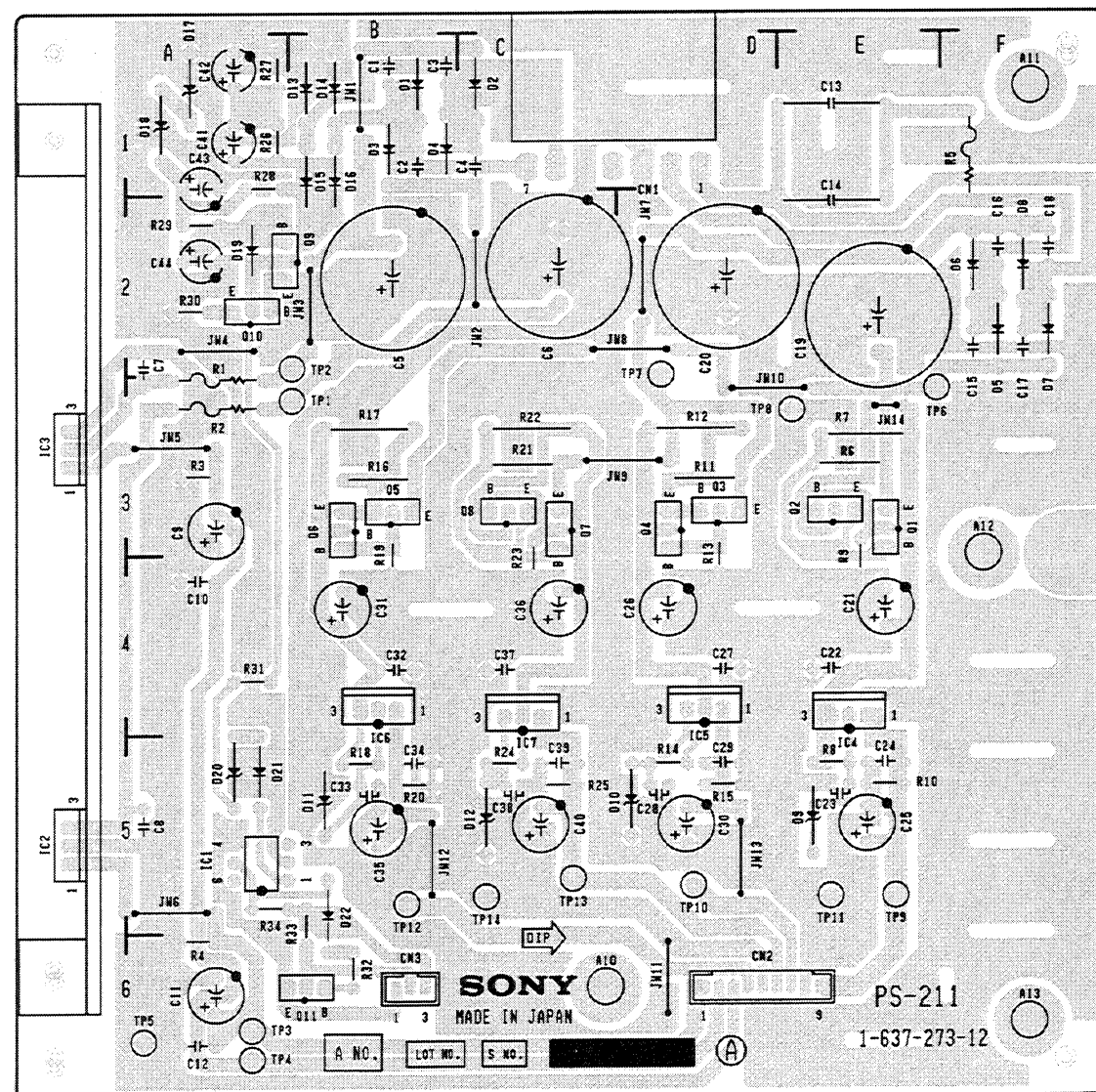


SOLDER SIDE PATTERN 1-637-269-11

PS-211

PS-211

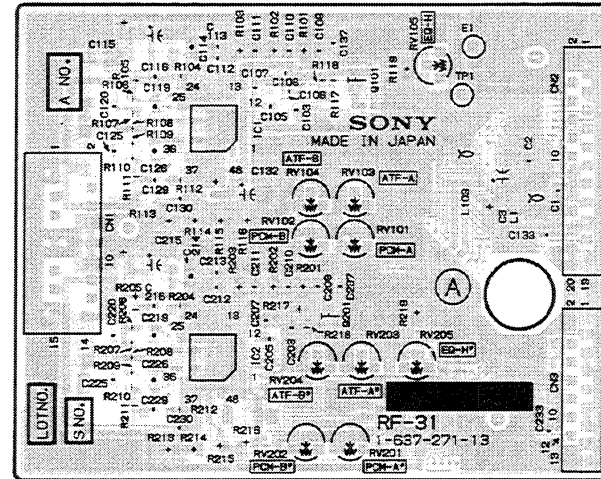
PS-211 BOARD (PCM-7030)
 (1-637-273-12)
 Component Side



SOLDER SIDE PATTERN 1-637-273-12

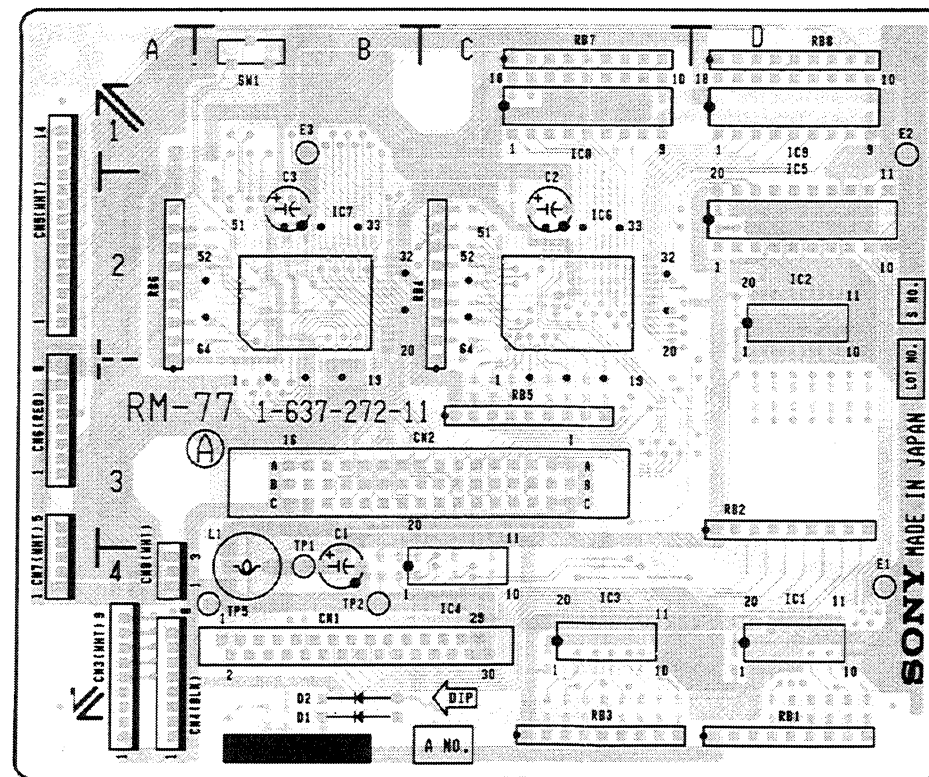
D1	B-1	TP5	A-6
D2	C-1	TP6	E-2
D3	B-1	TP7	D-2
D4	B-1	TP8	D-3
D5	F-3	TP9	E-5
D6	F-2	TP10	D-5
D7	F-3	TP11	E-5
D8	F-2	TP12	B-5
D9	E-5	TP13	C-5
D10	D-5	TP14	C-5
D11	B-5		
D12	C-5		
D13	B-1		
D14	B-1		
D15	B-1		
D16	B-1		
D17	A-1		
D18	A-1		
D19	A-2		
D20	A-5		
D21	A-5		
D22	B-4		
IC1	A-5		
IC2	A-5		
IC3	A-3		
IC4	E-5		
IC5	D-4		
IC6	B-4		
IC7	C-5		
Q1	E-3		
Q2	E-3		
Q3	D-3		
Q4	D-3		
Q5	B-3		
Q6	B-3		
Q7	C-3		
Q8	C-3		
Q9	B-2		
Q10	A-2		
Q11	B-6		
TP1	B-3		
TP2	B-3		
TP3	A-6		
TP4	A-6		

RF-31 BOARD (PCM-7030)
(1-637-271-13)
Component Side



SOLDER SIDE PATTERN 1-637-271-13
RF-31 BOARD (PCM-7030) (1-637-271-13)

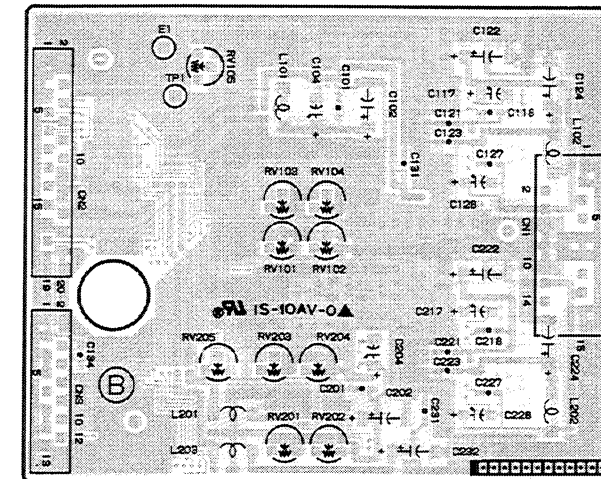
RM-77 BOARD (PCM-7030)
(1-637-272-11)
Component Side



SOLDER SIDE PATTERN 1-637-272-11
RM-77 BOARD (PCM-7030) (1-637-272-11)

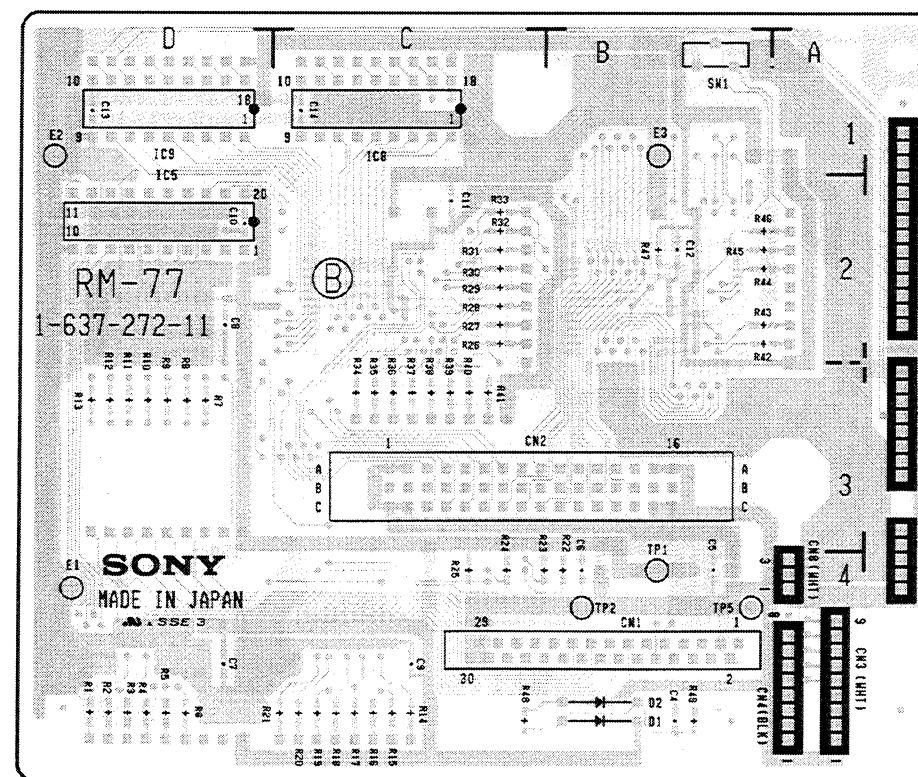
D1	B-4
D2	B-4
E1	D-4
E2	D-1
E3	B-1
IC1	D-4
IC2	D-2
IC3	C-4
IC4	C-4
IC5	D-2
IC6	C-2
IC7	B-2
IC8	C-1
IC9	D-1
SW1	B-1
TP1	B-4
TP2	B-4
TP5	B-4

Solder Side



SOLDER SIDE PATTERN 1-637-271-13
RF-31 BOARD (PCM-7030) (1-637-271-13)

Solder Side

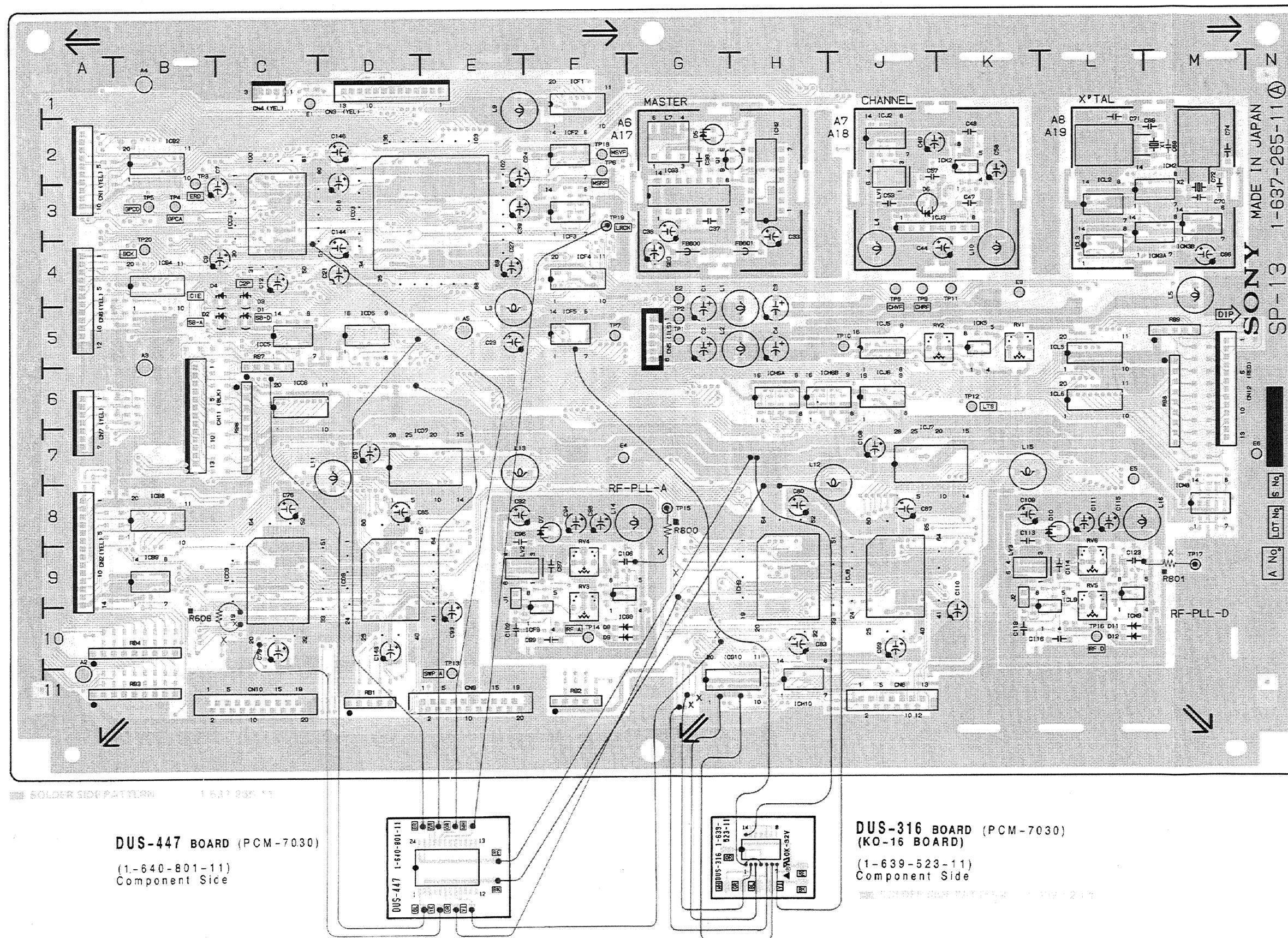


SOLDER SIDE PATTERN 1-637-272-11
RM-77 BOARD (PCM-7030) (1-637-272-11)

E1	D-4
E2	D-1
E3	B-1
D1	B-4
D2	B-4
IC5	D-2
IC8	C-1
IC9	D-1
TP1	B-4
TP2	B-4
TP5	B-4

SP-13 BOARD (PCM-7030)
(1-637-265-11)
Component Side

Serial No. UC 20001 to 20045
EK 50001 to 50200



SONY
MADE IN JAPAN
SP-13 1-637-265-11A

Applied Serial No. UC 20001 to 20025
EK 50001 to 50060

Jumpers that have been soldered or cut. ICC9-18 X ICC8

Parts that have been added. R608

Applied Serial No. UC 20026 to 20045
EK 50061 to 50200

Jumpers that have been soldered or cut. ICG10-3 X ICD8
ICG10-7 X ICG9
C106 X TP15
C123 X TP17

Parts marked with * that have been installed on the component side. *R500
*R501

Applied Serial No. UC 20001 to 20045
EK 50001 to 50200

Jumpers that have been soldered or cut. ICG7-14 +5V
ICG7-7 GND
ICG7-1,4 ICI
ICG7-2 ICD9
ICG7-3 ICG1
ICG7-5 ICG9
ICG7-8 ICG1
ICD3-47 ICG9
ICD3-46 ICH9
ICD3-43 ICG9
ICF6-1 ICG3

Parts that have been added. ICG7 (DUS-316 Bo)
ICF6 (DUS-447 Bo)

DUS-447 BOARD (PCM-7030)
(1-640-801-11)
Component Side

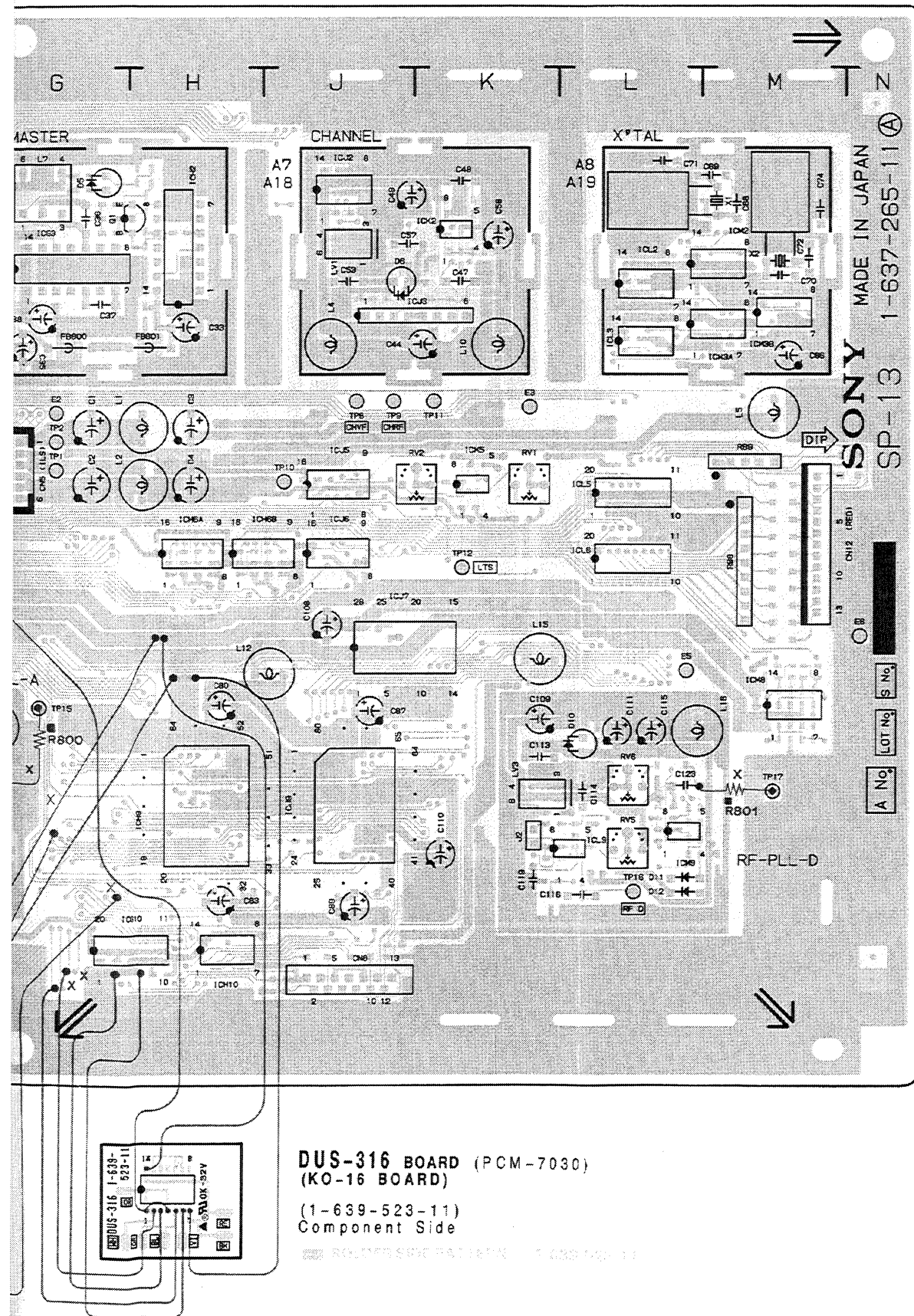
DUS-316 BOARD (PCM-7030)
(KO-16 BOARD)
(1-639-523-11)
Component Side

B-36-1(a)

B-37-1(a)

SP-13

SP-13



B-37-1(a)

Applied Serial No. UC 20001 to 20025 EK 50001 to 50060	
Jumpers that have been soldered or cut.	ICC9-18 → X → ICC8-5
Parts that have been added.	R508

Applied Serial No. UC 20026 to 20045 EK 50061 to 50200	
Jumpers that have been soldered or cut.	ICG10-3 → X → ICD8-25 ICG10-7 → X → ICD9-25 C105 → X → TP15 C123 → X → TP17
Parts marked with * that have been installed on the component side.	* R500 * R501

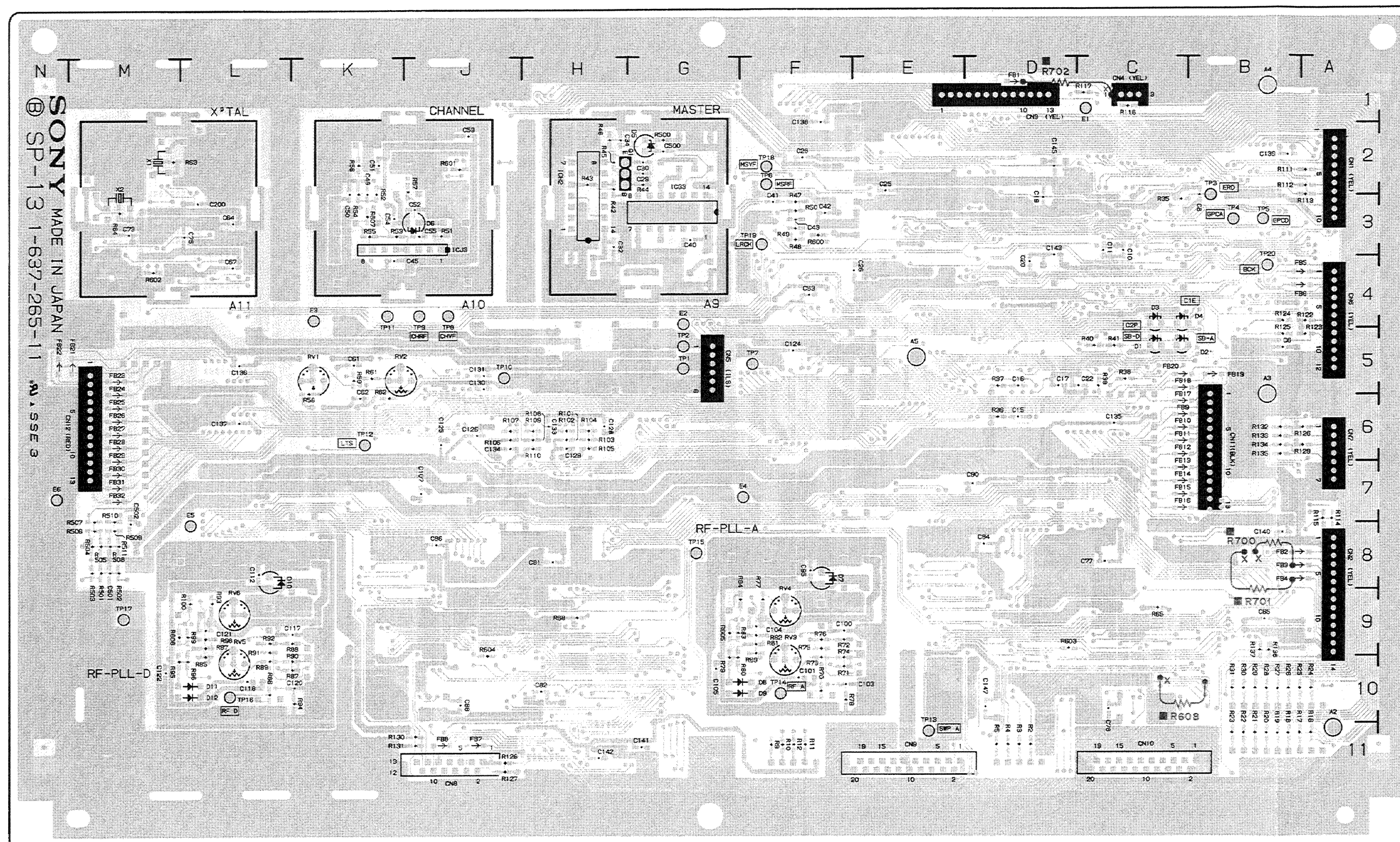
Applied Serial No. UC 20001 to 20045 EK 50001 to 50200																									
Jumpers that have been soldered or cut.	<table> <tr> <td>ICG7-14 → +5V(RED)</td><td>ICF6-2 → GND(BLK)</td></tr> <tr> <td>ICG7-7 → GND(BLK)</td><td>ICF6-3 → GND(BLK)</td></tr> <tr> <td>ICG7-1,4 → ICF5-5(ORG)</td><td>ICF6-6 → ICC9-29(YEL)</td></tr> <tr> <td>ICG7-2 → ICD9-25(WHT)</td><td>ICF6-7 → ICH9-29(GRY)</td></tr> <tr> <td>ICG7-3 → ICG10-3(GRY)</td><td>ICF6-8 → ICJ9-32(VIO)</td></tr> <tr> <td>ICG7-5 → ICJ9-25(BLU)</td><td>ICF6-11 → GND(BLK)</td></tr> <tr> <td>ICG7-6 → ICG10-7(VIO)</td><td>ICF6-12 → GND(BLK)</td></tr> <tr> <td>ICD3-47 → ICC8-29</td><td>ICF6-18 → ICC9-27(WHT)</td></tr> <tr> <td>ICD3-46 → CH8-29</td><td>ICF6-20 → ICC3-54(ORG)</td></tr> <tr> <td>ICC3-43 → ICJ9-32</td><td>ICF6-21 → ICD3-46(GRY)</td></tr> <tr> <td>ICF6-1 → ICC3-43(BLU)</td><td>ICF6-22 → ICD3-47(BRC)</td></tr> <tr> <td></td><td>ICF6-24 → +5V(RED)</td></tr> </table>	ICG7-14 → +5V(RED)	ICF6-2 → GND(BLK)	ICG7-7 → GND(BLK)	ICF6-3 → GND(BLK)	ICG7-1,4 → ICF5-5(ORG)	ICF6-6 → ICC9-29(YEL)	ICG7-2 → ICD9-25(WHT)	ICF6-7 → ICH9-29(GRY)	ICG7-3 → ICG10-3(GRY)	ICF6-8 → ICJ9-32(VIO)	ICG7-5 → ICJ9-25(BLU)	ICF6-11 → GND(BLK)	ICG7-6 → ICG10-7(VIO)	ICF6-12 → GND(BLK)	ICD3-47 → ICC8-29	ICF6-18 → ICC9-27(WHT)	ICD3-46 → CH8-29	ICF6-20 → ICC3-54(ORG)	ICC3-43 → ICJ9-32	ICF6-21 → ICD3-46(GRY)	ICF6-1 → ICC3-43(BLU)	ICF6-22 → ICD3-47(BRC)		ICF6-24 → +5V(RED)
ICG7-14 → +5V(RED)	ICF6-2 → GND(BLK)																								
ICG7-7 → GND(BLK)	ICF6-3 → GND(BLK)																								
ICG7-1,4 → ICF5-5(ORG)	ICF6-6 → ICC9-29(YEL)																								
ICG7-2 → ICD9-25(WHT)	ICF6-7 → ICH9-29(GRY)																								
ICG7-3 → ICG10-3(GRY)	ICF6-8 → ICJ9-32(VIO)																								
ICG7-5 → ICJ9-25(BLU)	ICF6-11 → GND(BLK)																								
ICG7-6 → ICG10-7(VIO)	ICF6-12 → GND(BLK)																								
ICD3-47 → ICC8-29	ICF6-18 → ICC9-27(WHT)																								
ICD3-46 → CH8-29	ICF6-20 → ICC3-54(ORG)																								
ICC3-43 → ICJ9-32	ICF6-21 → ICD3-46(GRY)																								
ICF6-1 → ICC3-43(BLU)	ICF6-22 → ICD3-47(BRC)																								
	ICF6-24 → +5V(RED)																								
Parts that have been added.	ICG7 [DUS-316 Board (KO-16 Board)] ICF8 [DUS-447 Board]																								

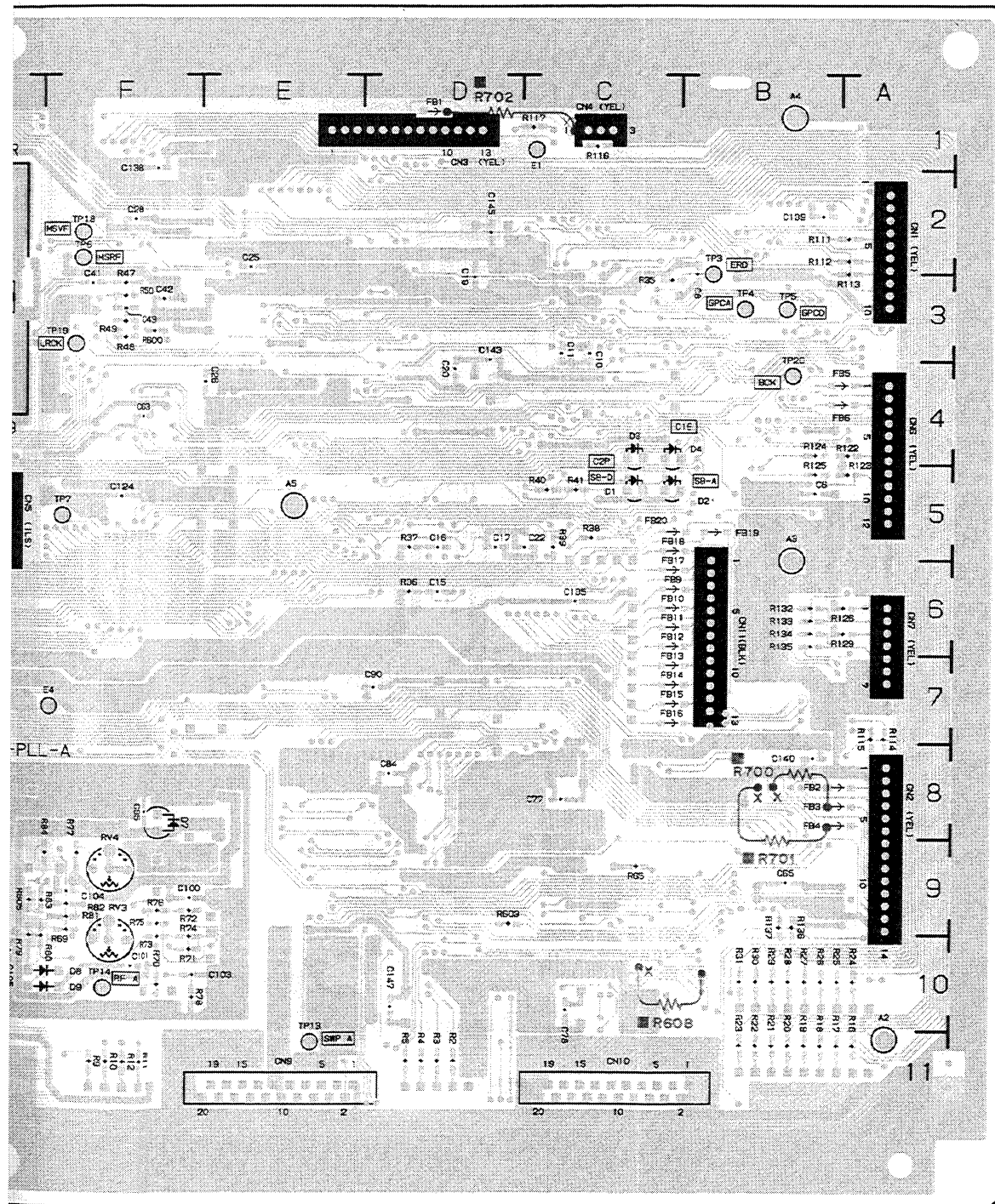
B-38-1(a)

D1	C-5	ICJ3	J-3	X1	M-2
D2	B-5	ICJ5	J-5	X2	M-3
D3	C-4	ICJ6	J-6		
D4	B-4	ICJ7	J-7		
D5	G-2	ICJ9	J-9		
D6	J-3	ICK2	K-2		
D7	F-8	ICK5	K-5		
D8	F-10	ICL2	L-3		
D9	F-10	ICL3	L-4		
D10	L-8	ICL5	L-5		
D11	L-10	ICL6	L-6		
D12	L-10	ICL9	L-9		
		ICM2	M-2		
E1	C-1	ICM3A	M-4		
E2	G-4	ICM3B	M-4		
E3	K-4	ICM8	M-8		
E4	F-7	ICM9	L-10		
E5	L-7				
E6	N-7	Q1	G-2		
ICB2	B-2	RV1	K-5		
ICB4	B-4	RV2	J-5		
ICB8	B-8	RV3	F-9		
ICB9	B-9	RV4	F-9		
ICC3	C-3	RV5	L-9		
ICC5	C-5	RV6	L-9		
ICC6	C-6				
ICC9	C-9	TP1	G-5		
ICD3	D-3	TP2	G-5		
ICD5	D-5	TP3	B-2		
ICD7	D-7	TP4	B-3		
ICD9	D-9	TP5	B-3		
ICF1	F-1	TP6	F-2		
ICF2	F-2	TP7	F-5		
ICF3	F-3	TP8	J-4		
ICF4	F-4	TP9	J-4		
ICF5	F-5	TP10	J-5		
ICF9	F-10	TP11	K-4		
ICG3	G-2	TP12	K-6		
ICG9	F-10	TP13	E-10		
ICG10	G-10	TP14	F-10		
ICH2	H-2	TP15	G-8		
ICH6A	H-6	TP16	L-10		
ICH6B	H-6	TP17	M-9		
ICH9	H-9	TP18	F-2		
ICH10	H-11	TP19	F-3		
ICJ2	J-2	TP20	B-4		

SP-13 BOARD (PCM-7030)
(1-637-265-11)
Solder Side

Serial No. UC 20001 to 20045
EK 50001 to 50200





B-37-2(a)

D1	C-5	ICJ3	J-3	X1	M-2
D2	B-5	ICJ5	J-5	X2	M-3
D3	C-4	ICJ6	J-6		
D4	B-4	ICJ7	J-7		
D5	G-2	ICJ9	J-9		
D6	J-3	ICK2	K-2		
D7	F-8	ICK5	K-5		
D8	F-10	ICL2	L-3		
D9	F-10	ICL3	L-4		
D10	L-8	ICL5	L-5		
D11	L-10	ICL6	L-6		
D12	L-10	ICL9	L-9		
		ICM2	M-2		
E1	C-1	ICM3A	M-4		
E2	G-4	ICM3B	M-4		
E3	K-4	ICM8	M-8		
E4	F-7	ICM9	L-10		
E5	L-7				
E6	N-7	Q1	G-2		
ICB2	B-2	RV1	K-5		
ICB4	B-4	RV2	J-5		
ICB8	B-8	RV3	F-9		
ICB9	B-9	RV4	F-9		
ICC3	C-3	RV5	L-9		
ICC5	C-5	RV6	L-9		
ICC6	C-6				
ICC9	C-9	TP1	G-5		
ICD3	D-3	TP2	G-5		
ICD5	D-5	TP3	B-2		
ICD7	D-7	TP4	B-3		
ICD9	D-9	TP5	B-3		
ICF1	F-1	TP6	F-2		
ICF2	F-2	TP7	F-5		
ICF3	F-3	TP8	J-4		
ICF4	F-4	TP9	J-4		
ICF5	F-5	TP10	J-5		
ICF9	F-10	TP11	K-4		
ICG3	G-2	TP12	K-6		
ICG9	F-10	TP13	E-10		
ICG10	G-10	TP14	F-10		
ICH2	H-2	TP15	G-8		
ICH6A	H-6	TP16	L-10		
ICH6B	H-6	TP17	M-9		
ICH9	H-9	TP18	F-2		
ICH10	H-11	TP19	F-3		
ICJ2	J-2	TP20	B-4		

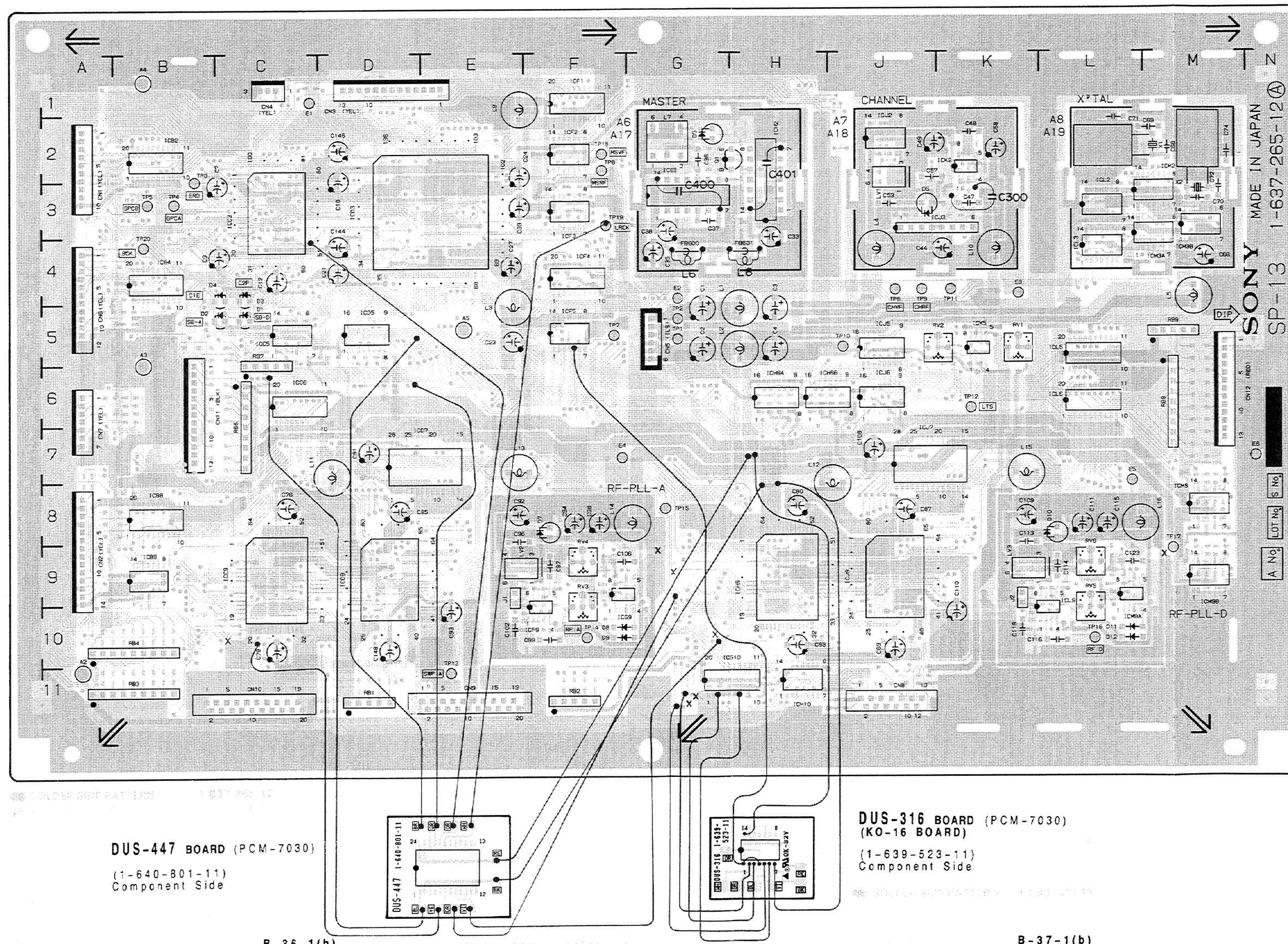
Applied Serial No. UC 20026 to 20045 EK 50001 to 50200	
Jumpers that have been soldered or cut.	ICG9-18 — X — ICB8-5
Parts marked with * that have been installed on the solder side.	*R608

Applied Serial No. UC 20001 to 20045 EK 50001 to 50200	
Jumpers that have been soldered or cut.	FB1 — X — ICB8-12 FB3 — X — ICB8-16 FB4 — X — ICB8-14
Parts marked with * that have been installed on the solder side.	*R700 *R701 *R702

B-38-2(a)

SP-13 BOARD (PCM-7030)
(1-637-265-12)
Component Side

Serial No. UC 20046 to 20115
EK 50201 to 50580



DUS-447 BOARD (PCM-7030)
(1-640-801-11)
Component Side

DUS-316 BOARD (PCM-7030)
(KO-16 BOARD)
(1-639-523-11)
Component Side

Applied Serial No. UC 20046 to 20115 EK 50201 to 50580	
Jumpers that have been soldered or cut.	ICG10-3 X ICD9-2 ICG10-7 X ICD9-2 C108 X TP15 C123 X TP17
Parts that have been added.	ICG7 (DUS-316 Board) ICF6 (DUS-447 Board)

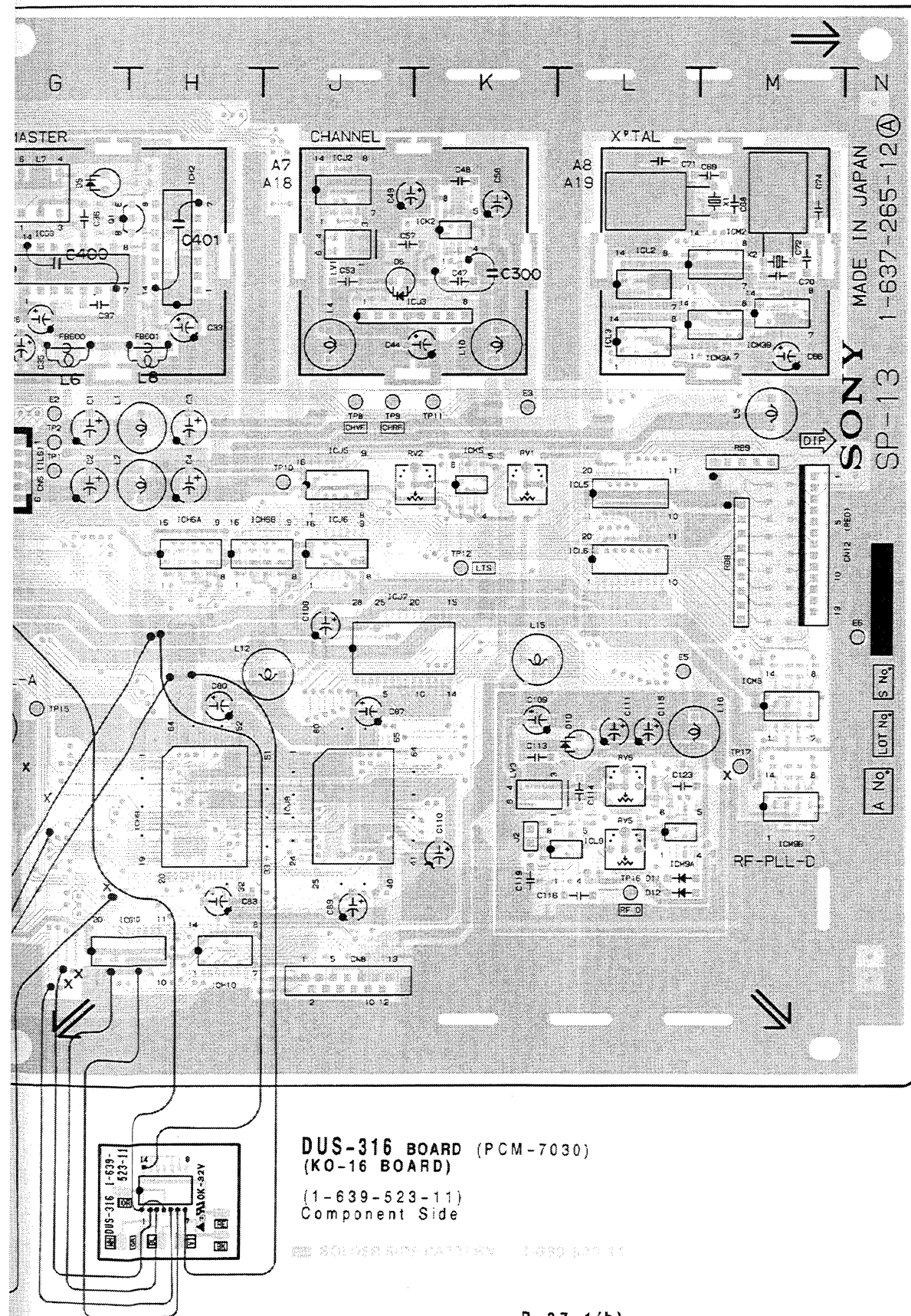
Applied Serial No. UC 20116 and higher EK 50381 and higher	
Parts that have been changed.	FB600 → L6 FB601
Parts that have been added.	C300, 400, 401

B-36-1(b)

B-37-1(b)

SP-13

SP-13



B-37-1(b)

Applied Serial No. UC 20048 to 20115 EK 50201 to 50580			
Jumpers that have been soldered or cut.	ICG10-3 X ICD9-25 ICG10-7 X ICJ8-25 C108 X TP15 C123 X TP17	ICG7-14 +5V(RED) ICG7-7 GND(BLK) ICG7-1,4 ICF6-5(ORG) ICG7-2 ICD9-25(WHT) ICG7-3 ICG10-3(GRY) ICG7-5 ICJ9-25(BLU) ICG7-6 ICG10-7(VIO) ICD3-47 X ICC9-29 ICD3-46 X ICH9-29 ICC9-43 X ICJ9-32 ICF6-1 ICC3-43(BLU)	ICF5-2 GND(BLK) ICF5-3 GND(BLK) ICF5-6 ICC9-29(VEL) ICF5-7 ICH9-29(GRY) ICF5-8 ICJ9-32(VIO) ICF5-11 GND(BLK) ICF5-12 GND(BLK) ICF5-19 ICC9-27(WHT) ICF5-20 ICC3-54(ORG) ICF5-21 ICD3-46(GRY) ICF5-22 ICD3-47(BRO) ICF5-24 +5V(RED)
Parts that have been added.	ICG7 (DUS-316 Board(KO-16 Board)) ICF6 (DUS-447 Board)		

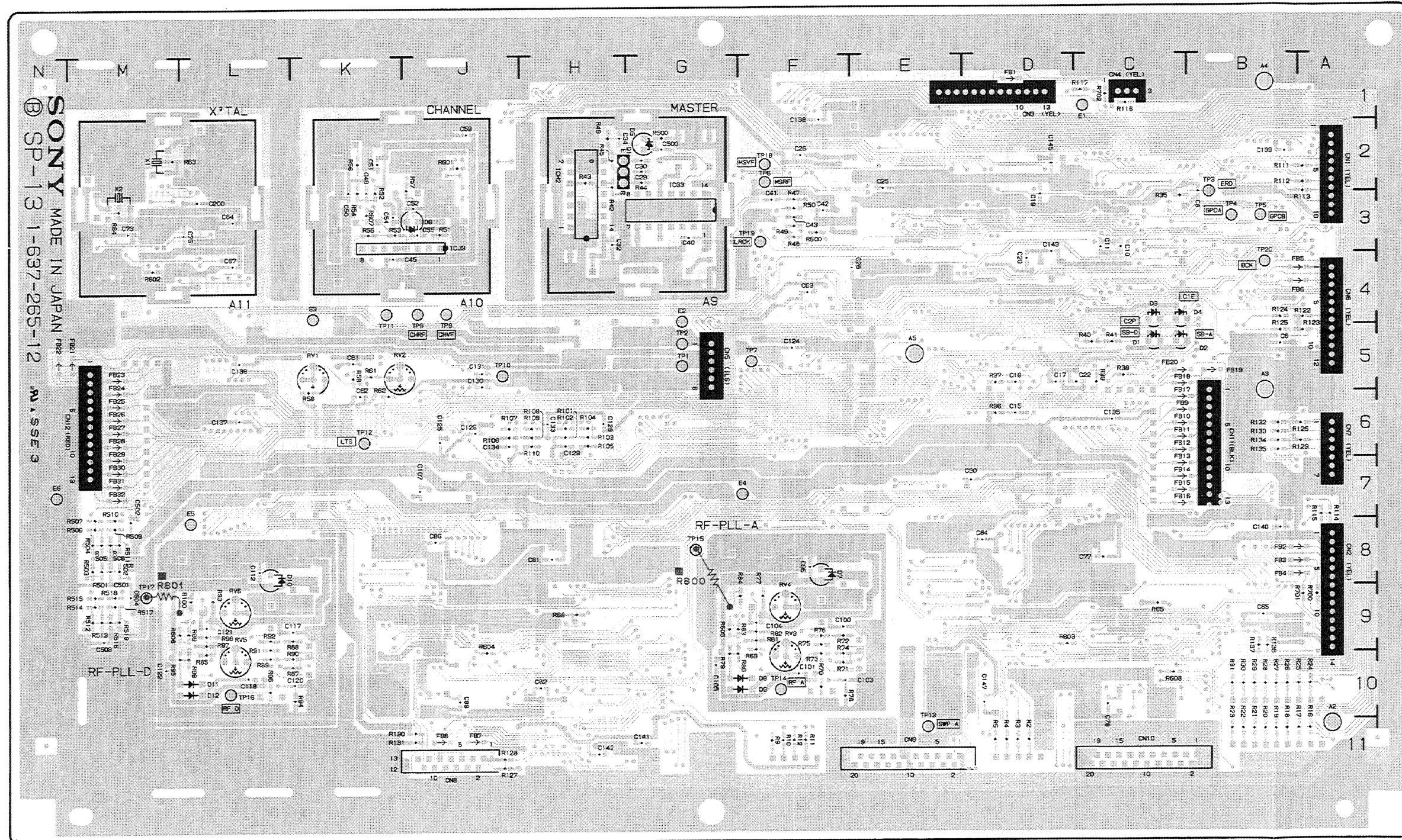
Applied Serial No. UC 20116 and higher EK 50381 and higher	
Parts that have been changed.	FB600 → L6 FB601 → L8
Parts that have been added.	C300, 400, 401

D1	C-5	ICJ3	J-3	X1	M-2
D2	B-5	ICJ5	J-5	X2	M-3
D3	C-4	ICJ6	J-6		
D4	B-4	ICJ7	J-7		
D5	G-2	ICJ9	J-9		
D6	J-3	ICK2	K-2		
D7	F-8	ICK5	K-5		
D8	F-10	ICL2	L-3		
D9	F-10	ICL3	L-4		
D10	L-8	ICL5	L-5		
D11	L-10	ICL6	L-6		
D12	L-10	ICL9	L-9		
		ICM2	M-2		
E1	C-1	ICM3A	M-4		
E2	G-4	ICM3B	M-4		
E3	K-4	ICM8	M-8		
E4	F-7	ICM9	L-10		
E5	L-7				
E6	N-7	Q1	G-2		
ICB2	B-2	RV1	K-5		
ICB4	B-4	RV2	J-5		
ICB8	B-8	RV3	F-9		
ICB9	B-9	RV4	F-9		
ICC3	C-3	RV5	L-9		
ICC5	C-5	RV6	L-9		
ICC6	C-6				
ICC9	C-9	TP1	G-5		
ICD3	D-3	TP2	G-5		
ICD5	D-5	TP3	B-2		
ICD7	D-7	TP4	B-3		
ICD9	D-9	TP5	B-3		
ICF1	F-1	TP6	F-2		
ICF2	F-2	TP7	F-5		
ICF3	F-3	TP8	J-4		
ICF4	F-4	TP9	J-4		
ICF5	F-5	TP10	J-5		
ICF9	F-10	TP11	K-4		
ICG3	G-2	TP12	K-6		
ICG9	F-10	TP13	E-10		
ICG10	G-10	TP14	F-10		
ICH2	H-2	TP15	G-8		
ICH6A	H-6	TP16	L-10		
ICH6B	H-6	TP17	M-9		
ICH9	H-9	TP18	F-2		
ICH10	H-11	TP19	F-3		
ICJ2	J-2	TP20	B-4		

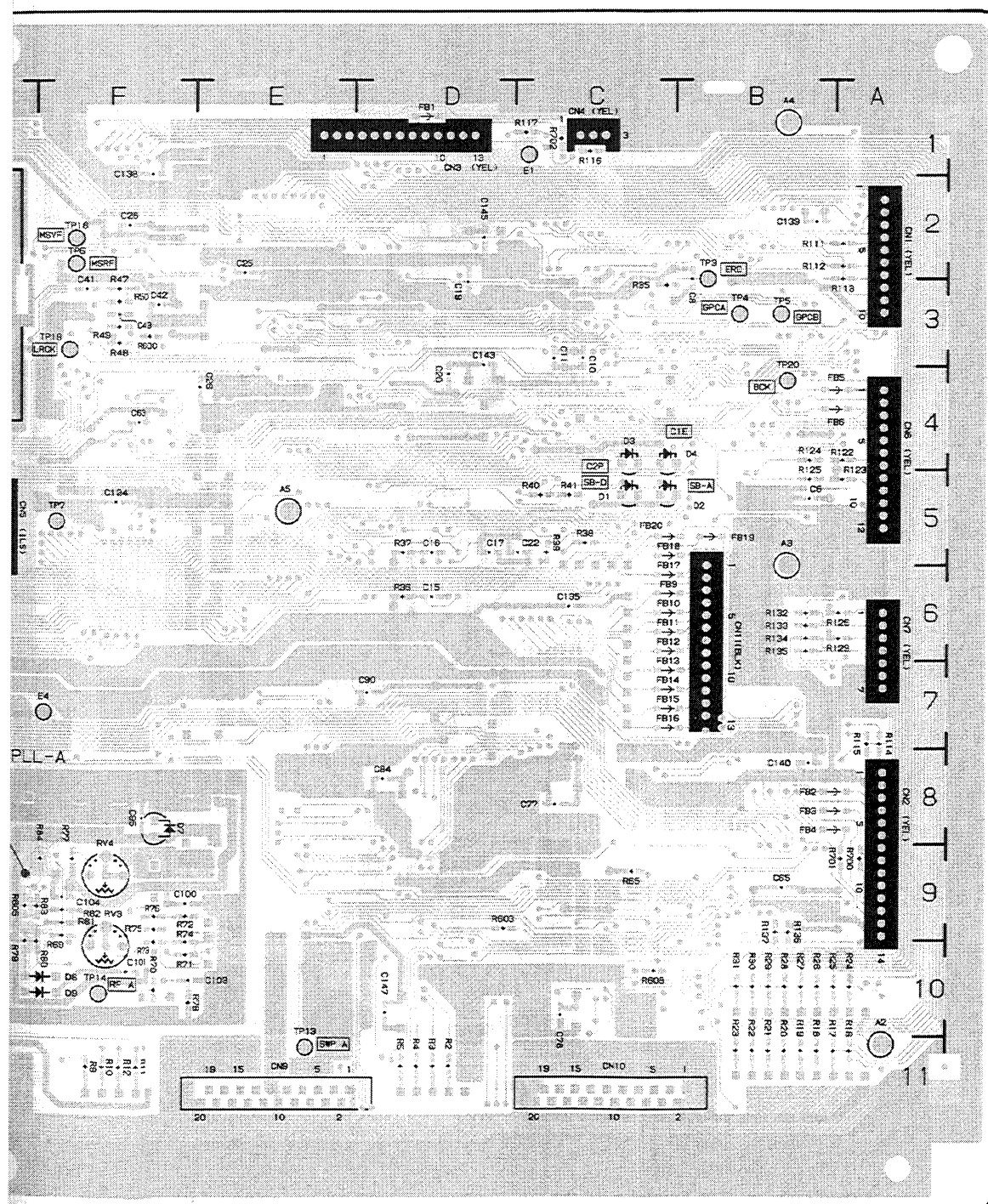
B-38-1(b)

SP-13 BOARD (PCM-7030)
(1-637-265-12)
Solder Side

Serial No. UC 20046 to 20115
EK 50201 to 50580



Applied Serial No. UC 20046 to 20115 EK 50201 to 50580	
Parts marked with * that have been installed on the solder side.	*R800 *R801



D1	C-5	ICJ3	J-3	X1	M-2
D2	B-5	ICJ5	J-5	X2	M-3
D3	C-4	ICJ6	J-6		
D4	B-4	ICJ7	J-7		
D5	G-2	ICJ9	J-9		
D6	J-3	ICK2	K-2		
D7	F-8	ICK5	K-5		
D8	F-10	ICL2	L-3		
D9	F-10	ICL3	L-4		
D10	L-8	ICL5	L-5		
D11	L-10	ICL6	L-6		
D12	L-10	ICL9	L-9		
		ICM2	M-2		
E1	C-1	ICM3A	M-4		
E2	G-4	ICM3B	M-4		
E3	K-4	ICM8	M-8		
E4	F-7	ICM9	L-10		
E5	L-7				
E6	N-7	Q1	G-2		
ICB2	B-2	RV1	K-5		
ICB4	B-4	RV2	J-5		
ICB8	B-8	RV3	F-9		
ICB9	B-9	RV4	F-9		
ICC3	C-3	RV5	L-9		
ICC5	C-5	RV6	L-9		
ICC6	C-6				
ICC9	C-9	TP1	G-5		
ICD3	D-3	TP2	G-5		
ICD5	D-5	TP3	B-2		
ICD7	D-7	TP4	B-3		
ICD9	D-9	TP5	B-3		
ICF1	F-1	TP6	F-2		
ICF2	F-2	TP7	F-5		
ICF3	F-3	TP8	J-4		
ICF4	F-4	TP9	J-4		
ICF5	F-5	TP10	J-5		
ICF9	F-10	TP11	K-4		
ICG3	G-2	TP12	K-6		
ICG9	F-10	TP13	E-10		
ICG10	G-10	TP14	F-10		
ICH2	H-2	TP15	G-8		
ICH6A	H-6	TP16	L-10		
ICH6B	H-6	TP17	M-9		
ICH9	H-9	TP18	F-2		
ICH10	H-11	TP19	F-3		
ICJ2	J-2	TP20	B-4		

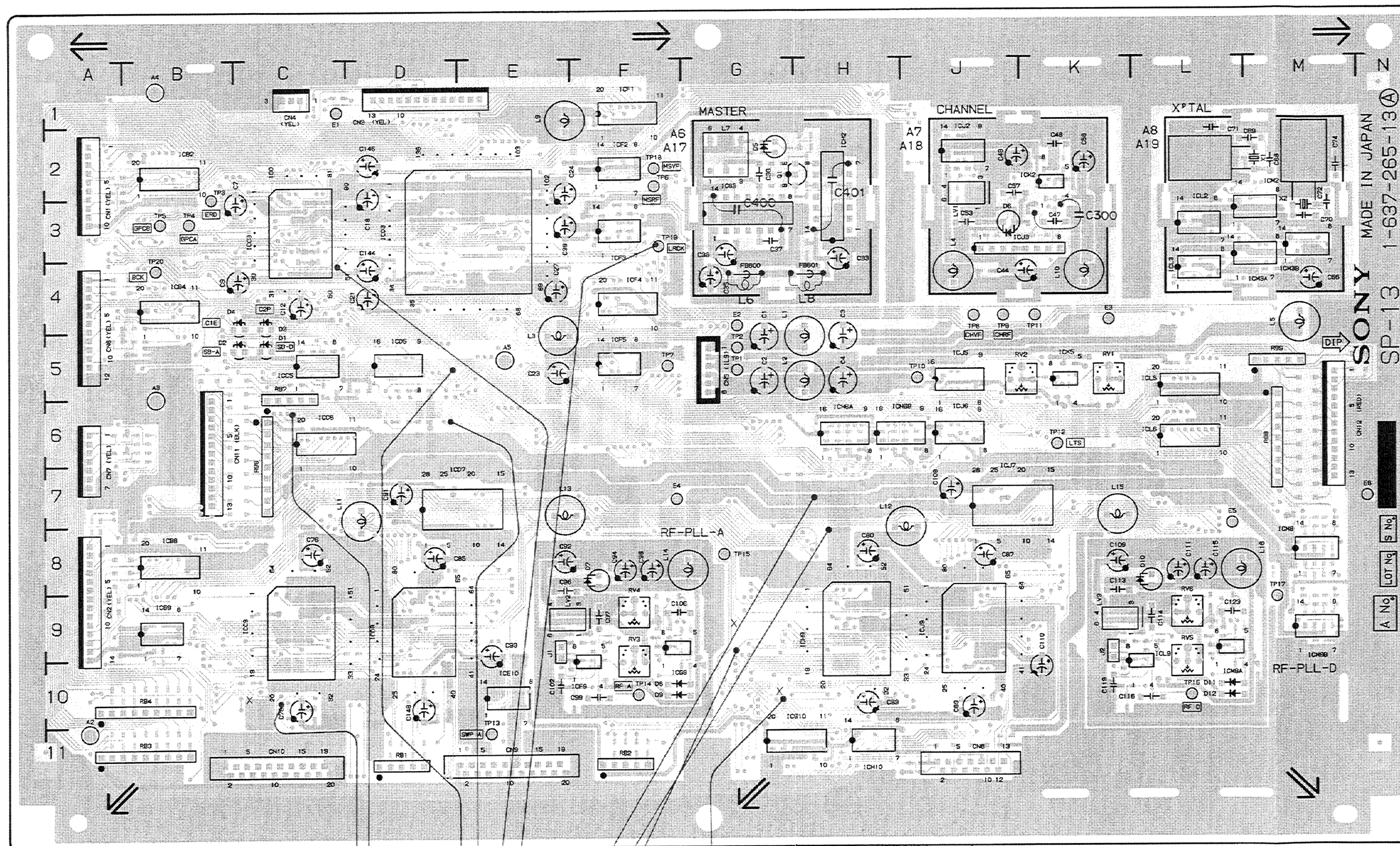
Applied Serial No. UC 20046 to 20115
EK 50201 to 50580

Parts marked with *
that have been installed
on the solder side.

*R406
*R201

SP-13 BOARD (PCM-7030)
(1-637-265-13)
Component Side

Serial No. UC 20116 to 25020
EK 50581 to 55040



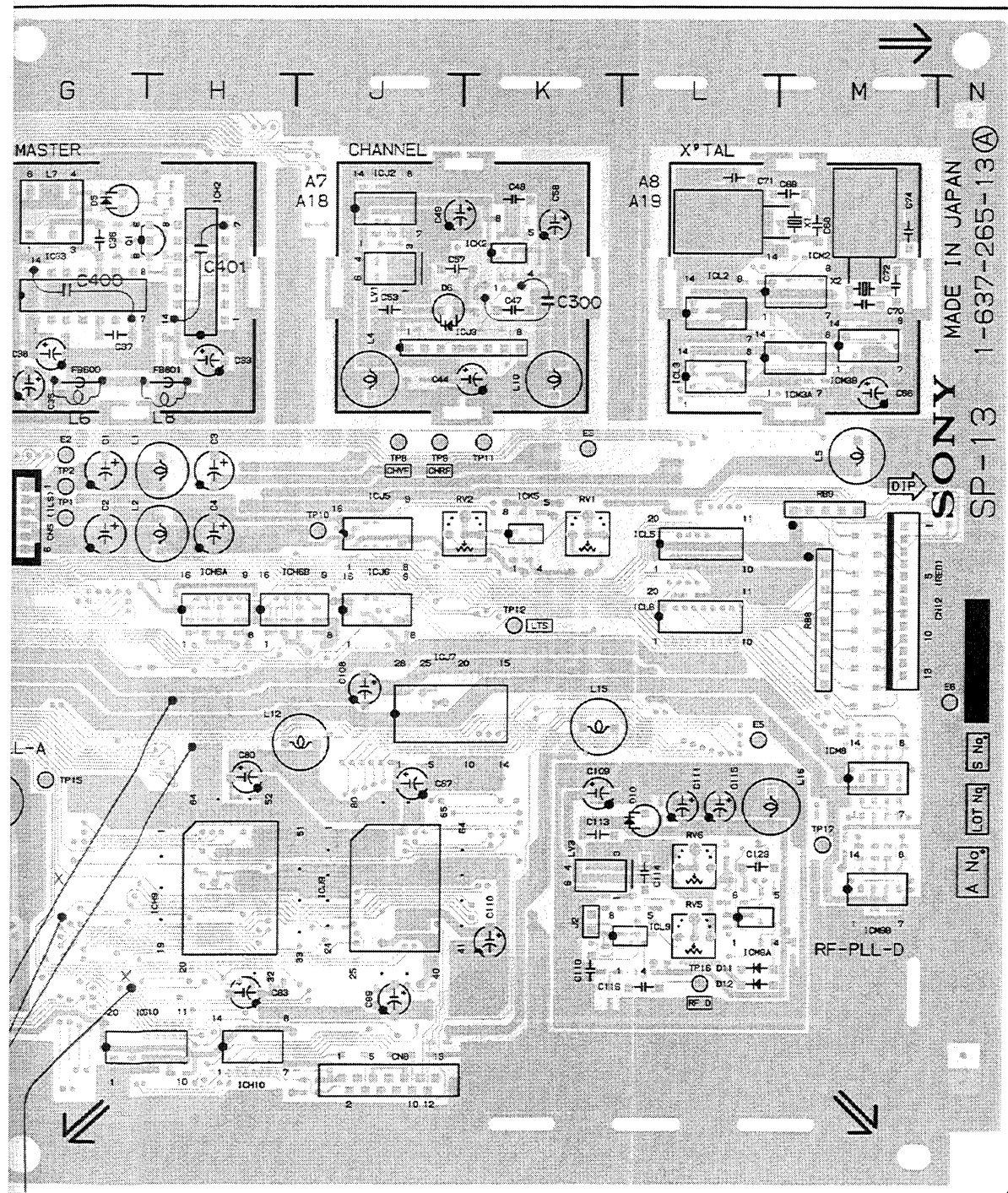
SONY
MADE IN JAPAN
SP-13 1-637-265-13(A)

Applied Serial No. UC 20116 and higher EK 50581 and higher	
Parts that have been changed.	FB600 — L6 FB601 — L8
Parts that have been soldered or cut.	ICD3-43 — ICD3-46 ICD3-46 — ICD3-47 ICD3-47 — ICD3-48 ICF5-1 — ICF5-2 ICF5-2 — GND(BL) ICF5-3 — GND(BL) ICF5-6 — ICF5-7 ICF5-7 — ICF5-8 ICF5-8 — ICF5-9
Parts that have been added.	C300, 400, 401 ICF5(DUS-447 Board)

DUS-447 BOARD (PCM-7030)
(1-640-801-11)
Component Side

B-36-1(c)

B-37-1(c)

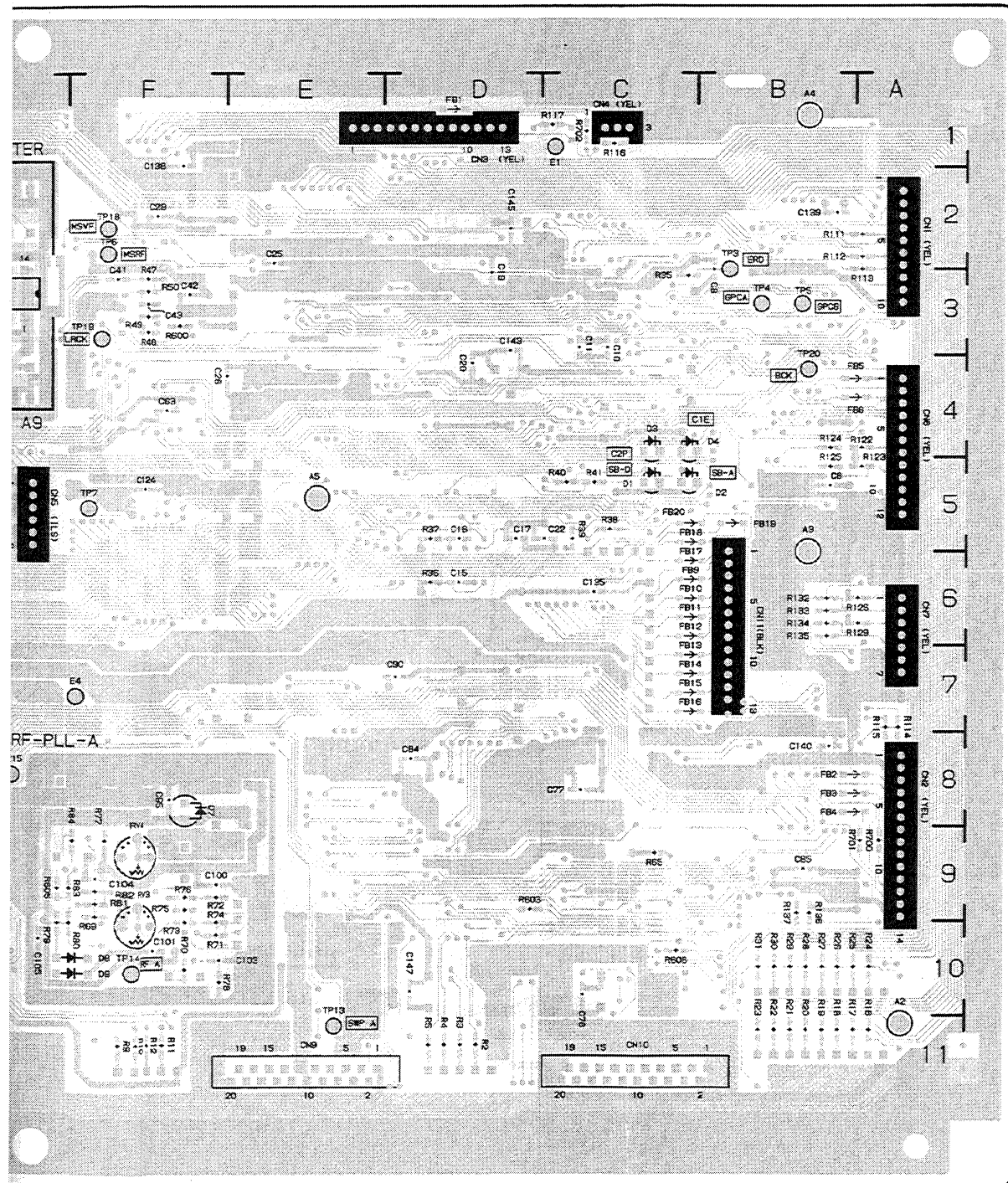


Applied Serial No. UC 20116 and higher EK 50581 and higher			
Parts that have been changed.	FB500 ----- L6 FB601 ----- L8		
Parts that have been soldered or cut.	ICD3-43 ----- ✕ ICH9-32 ICD3-46 ----- ✕ ICH9-26 ICD3-47 ----- ✕ ICC9-25 ICF6-1 ----- ICD3-43(BLU) ICF6-11 ----- GND(BLK) ICF6-2 ----- GND(BLK) ICF6-12 ----- GND(BLK) ICF6-3 ----- GND(BLK) ICF6-15 ----- ICC9-27(WHT) ICF6-6 ----- ICC9-29(YEL) ICF6-20 ----- ICC3-54(ORG) ICF6-7 ----- ICH9-29(GRY) ICF6-21 ----- ICD3-46(GRY) ICF6-8 ----- ICJ8-32(VIO) ICF6-22 ----- ICD3-47(BRO) ICF6-24 ----- +5V(RED)		
Parts that have been added.	C300,400,401 ICF6(DUS-447 Board)		

D1	C-5	ICJ3	J-3	X1	M-2
D2	B-5	ICJ5	J-5	X2	M-3
D3	C-4	ICJ6	J-6		
D4	B-4	ICJ7	J-7		
D5	G-2	ICJ9	J-9		
D6	J-3	ICK2	K-2		
D7	F-8	ICK5	K-5		
D8	F-10	ICL2	L-3		
D9	F-10	ICL3	L-4		
D10	L-8	ICL5	L-5		
D11	L-10	ICL6	L-6		
D12	L-10	ICL9	L-9		
		ICM2	M-2		
E1	C-1	ICM3A	M-4		
E2	G-4	ICM3B	M-4		
E3	K-4	ICM8	M-8		
E4	F-7	ICM9	L-10		
E5	L-7				
E6	N-7	Q1	G-2		
ICB2	B-2	RV1	K-5		
ICB4	B-4	RV2	J-5		
ICB8	B-8	RV3	F-9		
ICB9	B-9	RV4	F-9		
ICC3	C-3	RV5	L-9		
ICC5	C-5	RV6	L-9		
ICC6	C-6				
ICC9	C-9	TP1	G-5		
ICD3	D-3	TP2	G-5		
ICD5	D-5	TP3	B-2		
ICD7	D-7	TP4	B-3		
ICD9	D-9	TP5	B-3		
ICF1	F-1	TP6	F-2		
ICF2	F-2	TP7	F-5		
ICF3	F-3	TP8	J-4		
ICF4	F-4	TP9	J-4		
ICF5	F-5	TP10	J-5		
ICF9	F-10	TP11	K-4		
ICG3	G-2	TP12	K-6		
ICG9	F-10	TP13	E-10		
ICG10	G-10	TP14	F-10		
ICH2	H-2	TP15	G-8		
ICH6A	H-6	TP16	L-10		
ICH6B	H-6	TP17	M-9		
ICH9	H-9	TP18	F-2		
ICH10	H-11	TP19	F-3		
ICJ2	J-2	TP20	B-4		

Serial No.	UC 20116 to 25020
	EK 50581 to 55040

B - 37 - 2 (c)



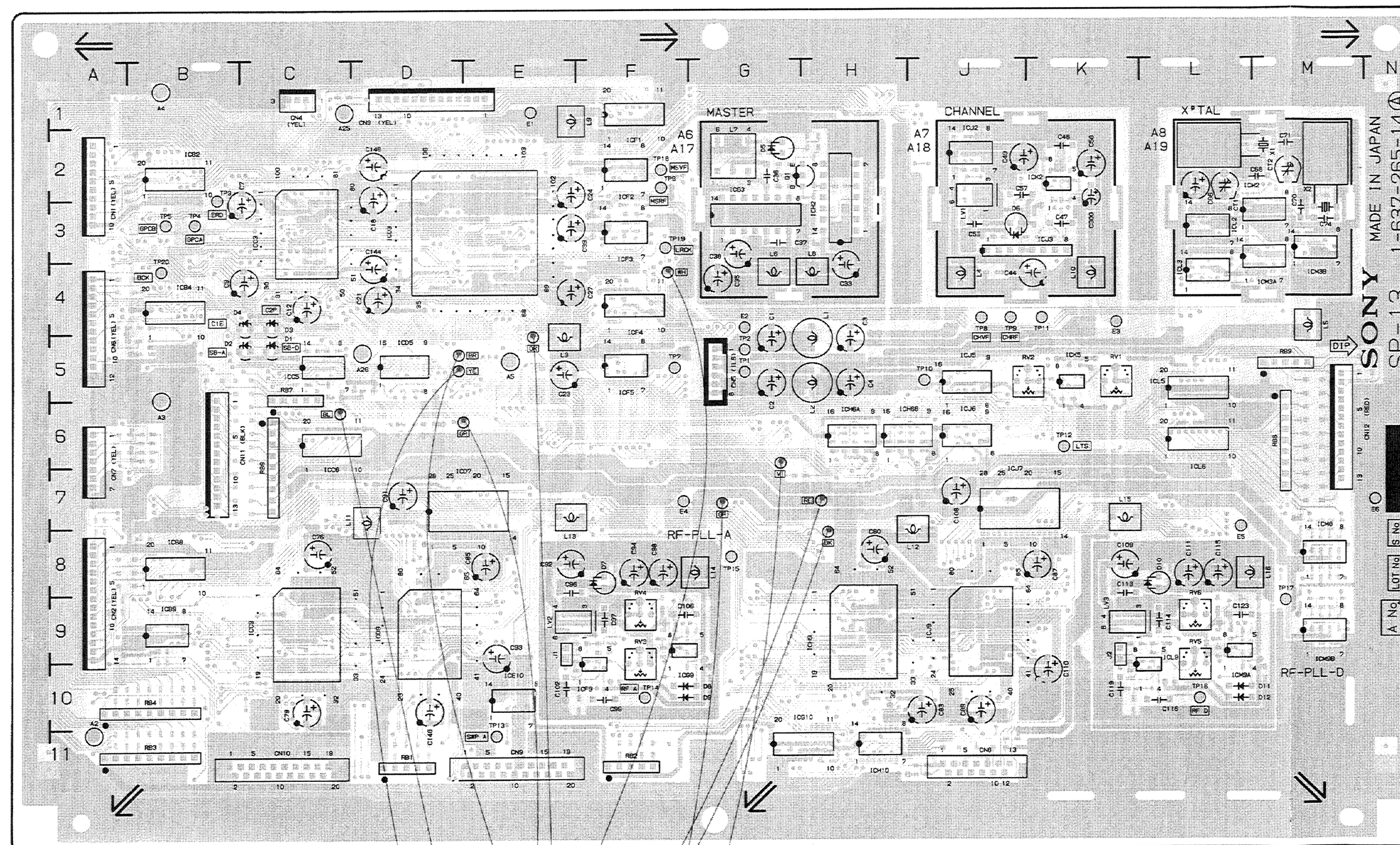
B-37-2(c)

D1	C-5	ICJ3	J-3	X1	M-2
D2	B-5	ICJ5	J-5	X2	M-3
D3	C-4	ICJ6	J-6		
D4	B-4	ICJ7	J-7		
D5	G-2	ICJ9	J-9		
D6	J-3	ICK2	K-2		
D7	F-8	ICK5	K-5		
D8	F-10	ICL2	L-3		
D9	F-10	ICL3	L-4		
D10	L-8	ICL5	L-5		
D11	L-10	ICL6	L-6		
D12	L-10	ICL9	L-9		
		ICM2	M-2		
E1	C-1	ICM3A	M-4		
E2	G-4	ICM3B	M-4		
E3	K-4	ICM8	M-8		
E4	F-7	ICM9	L-10		
E5	L-7				
E6	N-7	Q1	G-2		
ICB2	B-2	RV1	K-5		
ICB4	B-4	RV2	J-5		
ICB8	B-8	RV3	F-9		
ICB9	B-9	RV4	F-9		
ICC3	C-3	RV5	L-9		
ICC5	C-5	RV6	L-9		
ICC6	C-6				
ICC9	C-9	TP1	G-5		
ICD3	D-3	TP2	G-5		
ICD5	D-5	TP3	B-2		
ICD7	D-7	TP4	B-3		
ICD9	D-9	TP5	B-3		
ICF1	F-1	TP6	F-2		
ICF2	F-2	TP7	F-5		
ICF3	F-3	TP8	J-4		
ICF4	F-4	TP9	J-4		
ICF5	F-5	TP10	J-5		
ICF9	F-10	TP11	K-4		
ICG3	G-2	TP12	K-6		
ICG9	F-10	TP13	E-10		
ICG10	G-10	TP14	F-10		
ICH2	H-2	TP15	G-8		
ICH6A	H-6	TP16	L-10		
ICH6B	H-6	TP17	M-9		
ICH9	H-9	TP18	F-2		
ICH10	H-11	TP19	F-3		
ICJ2	J-2	TP20	B-4		

B-38-2(c)

SP-13 BOARD (PCM-7030)
(1-637-265-14)
Component Side

Serial No. UC 25021 to 25180



SONY
MADE IN JAPAN
SP-13 1-637-265-14(A)

Applied Serial No. UC 25021 and higher

Parts that have been soldered	ICF6-1 — ICF6-4
	ICF6-2 — GND[BL]
	ICF6-3 — GND[BL]
	ICF6-6 — ICF6-2
	ICF6-7 — ICF6-2
	ICF6-8 — ICF6-3
	ICF6-11 — GND[BL]
	ICF6-12 — GND[BL]
Parts that have been added	ICF6 (DUS-447 Board)

DUS-447 BOARD (PCM-7030)

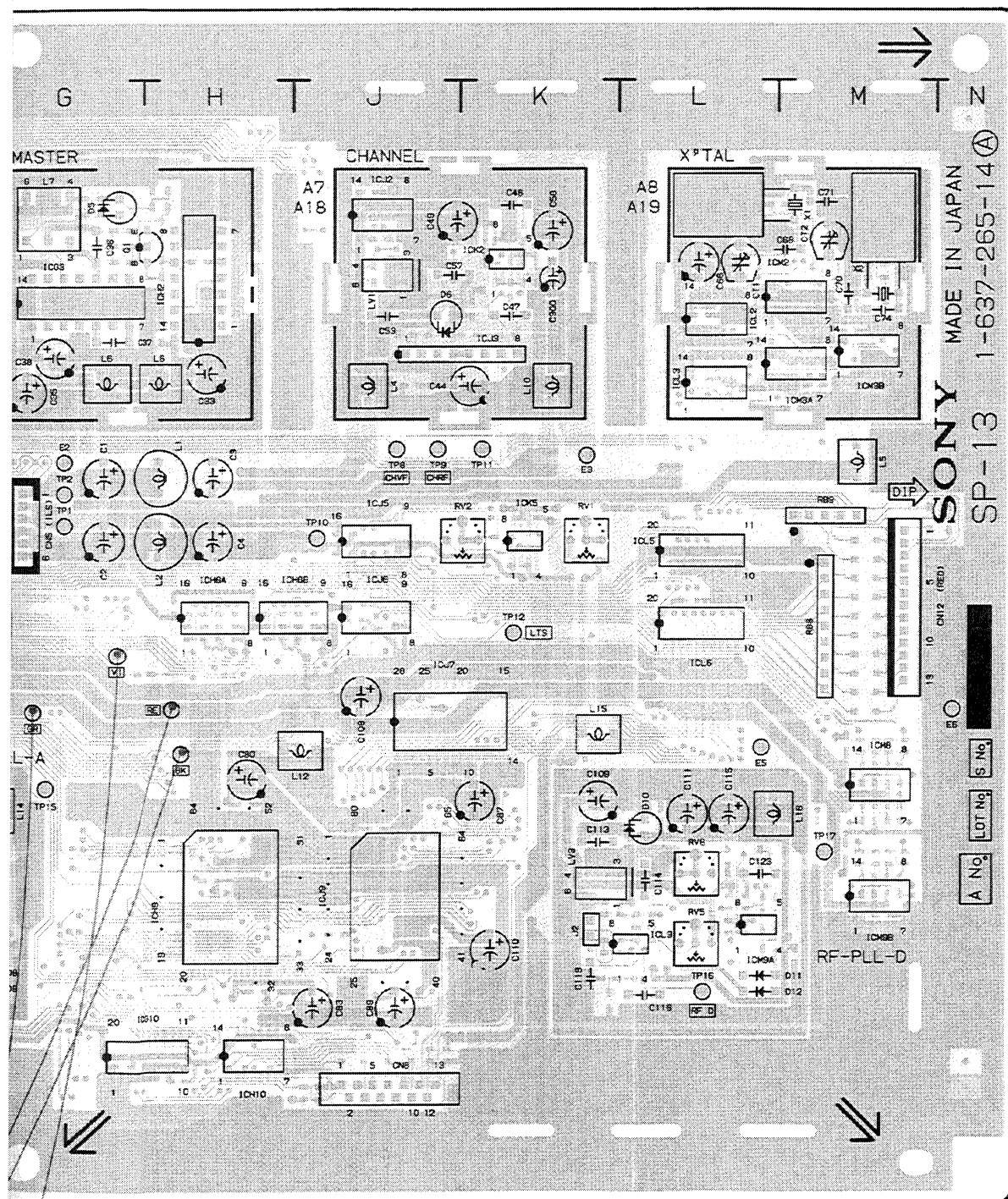
(1-640-801-11)
Component Side

B-36-1(d)

B-37-1(d)

SP-13

SP-13



DUS-447 BOARD (PCM-7030)

(1-640-801-11)
Component Side

B-37-1(d)

D1	C-5	ICJ3	J-3	X1	M-2
D2	B-5	ICJ5	J-5	X2	M-3
D3	C-4	ICJ6	J-6		
D4	B-4	ICJ7	J-7		
D5	G-2	ICJ9	J-9		
D6	J-3	ICK2	K-2		
D7	F-8	ICK5	K-5		
D8	F-10	ICL2	L-3		
D9	F-10	ICL3	L-4		
D10	L-8	ICL5	L-5		
D11	L-10	ICL6	L-6		
D12	L-10	ICL9	L-9		
		ICM2	M-2		
E1	E-1	ICM3A	M-4		
E2	G-4	ICM3B	M-4		
E3	K-4	ICM8	M-8		
E4	F-7	ICM9A	L-9		
E5	L-7	ICM9B	M-9		
E6	N-7				
		Q1	G-2		
ICB2	B-2				
ICB4	B-4	RV1	K-5		
ICB8	B-8	RV2	J-5		
ICB9	B-9	RV3	F-9		
ICC3	C-3	RV4	F-9		
ICC5	C-5	RV5	L-9		
ICC6	C-6	RV6	L-9		
ICC9	C-9				
ICD3	D-3	TP1	G-5		
ICD5	D-5	TP2	G-5		
ICD7	D-7	TP3	B-2		
ICD9	D-9	TP4	B-3		
ICE10	E-10	TP5	B-3		
ICF1	F-1	TP6	F-2		
ICF2	F-2	TP7	F-5		
ICF3	F-3	TP8	J-4		
ICF4	F-4	TP9	J-4		
ICF5	F-5	TP10	J-5		
ICF9	F-10	TP11	K-4		
ICG3	G-2	TP12	K-6		
ICG9	F-10	TP13	E-11		
ICG10	G-10	TP14	F-10		
ICH2	H-2	TP15	G-8		
ICH6A	H-6	TP16	L-10		
ICH6B	H-6	TP17	M-9		
ICH9	H-9	TP18	F-2		
ICH10	H-11	TP19	F-3		
ICJ2	J-2	TP20	B-4		

Applied Serial No. UC 25021 and higher

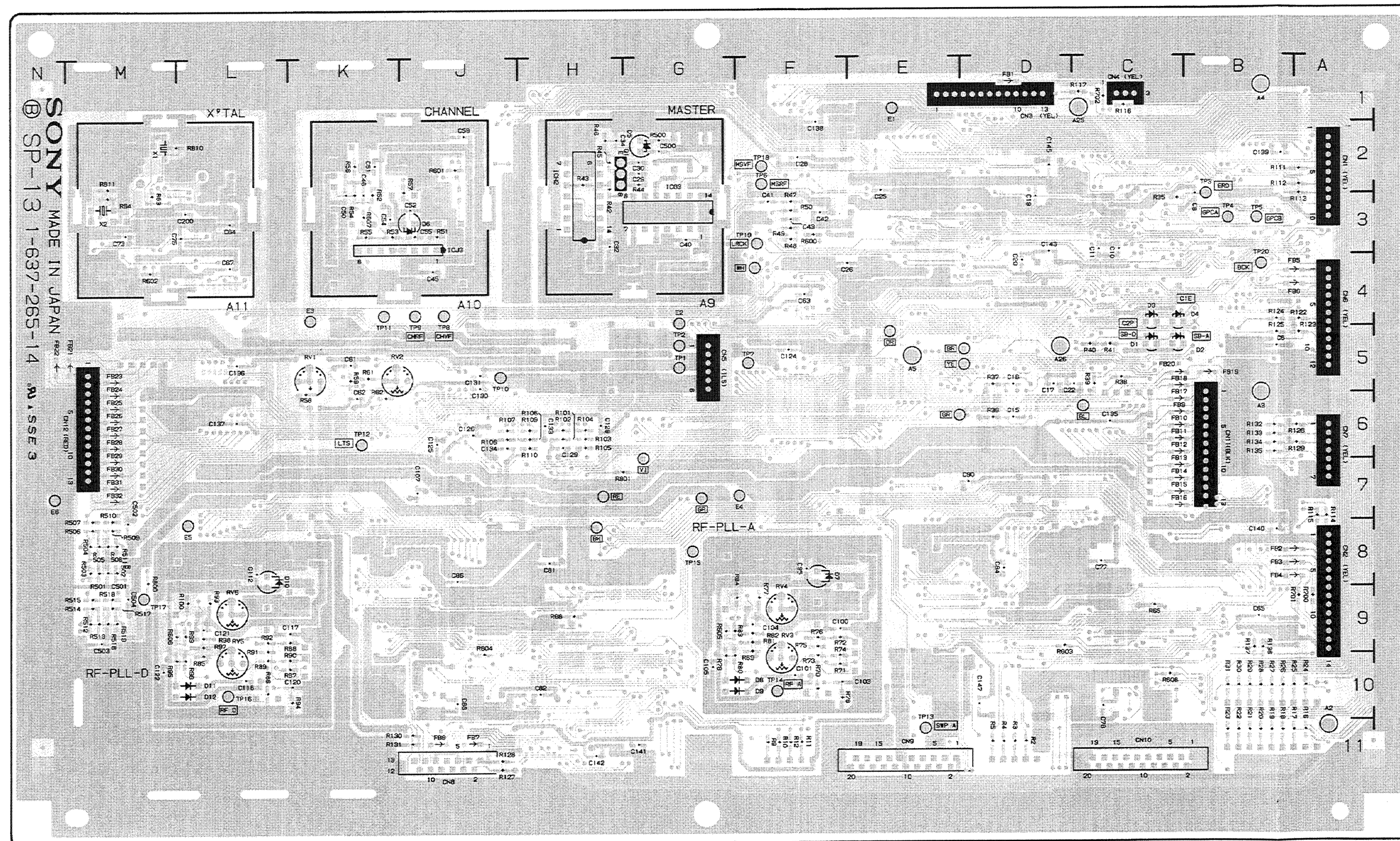
Parts that have been soldered.	ICF6-1 ——— ICD3-40(BLU)	ICF6-15 ——— ICC9-27(WHT)
	ICF6-2 ——— GND(BLK)	ICF6-20 ——— ICC3-54(ORG)
	ICF6-3 ——— GND(BLK)	ICF6-21 ——— CD3-46(GRY)
	ICF6-6 ——— ICC9-29(YEL)	ICF6-22 ——— ICD3-47(BRD)
	ICF6-7 ——— ICH9-28(GRY)	ICF6-24 ——— +5V(RED)
	ICF6-8 ——— ICJ9-32(VIO)	
	ICF6-11 ——— GND(BLK)	
	ICF6-12 ——— GND(BLK)	

Parts that have been added. ICF6 (DUS-447 Board)

B-38-1(d)

SP-13 BOARD (PCM-7030)
(1-637-265-14)
Solder Side

Serial No. UC 25021 to 25180

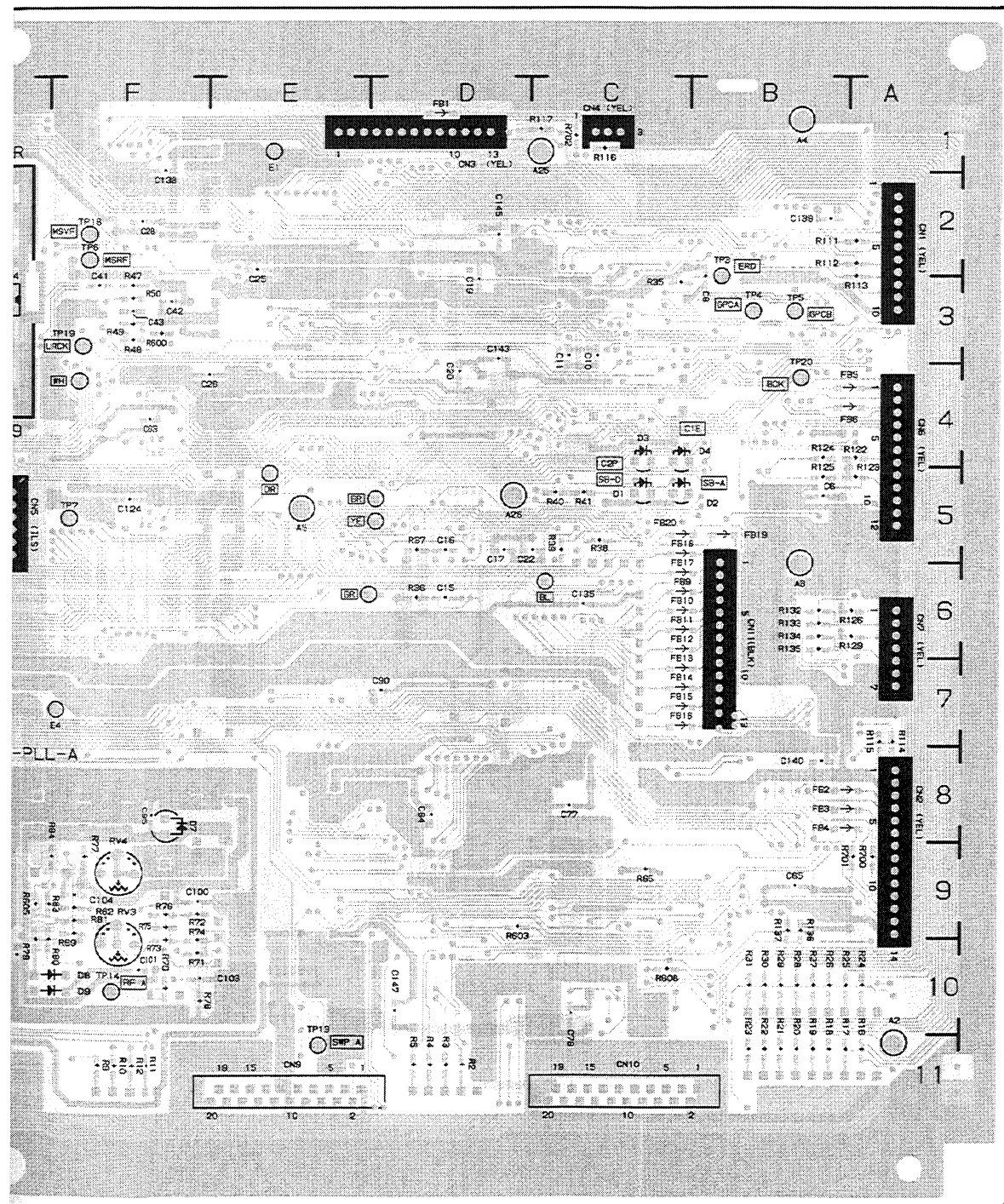


SOLDER SIDE PATTERN

1-637-265-14

B-36-2(d)

B-37-2(d)



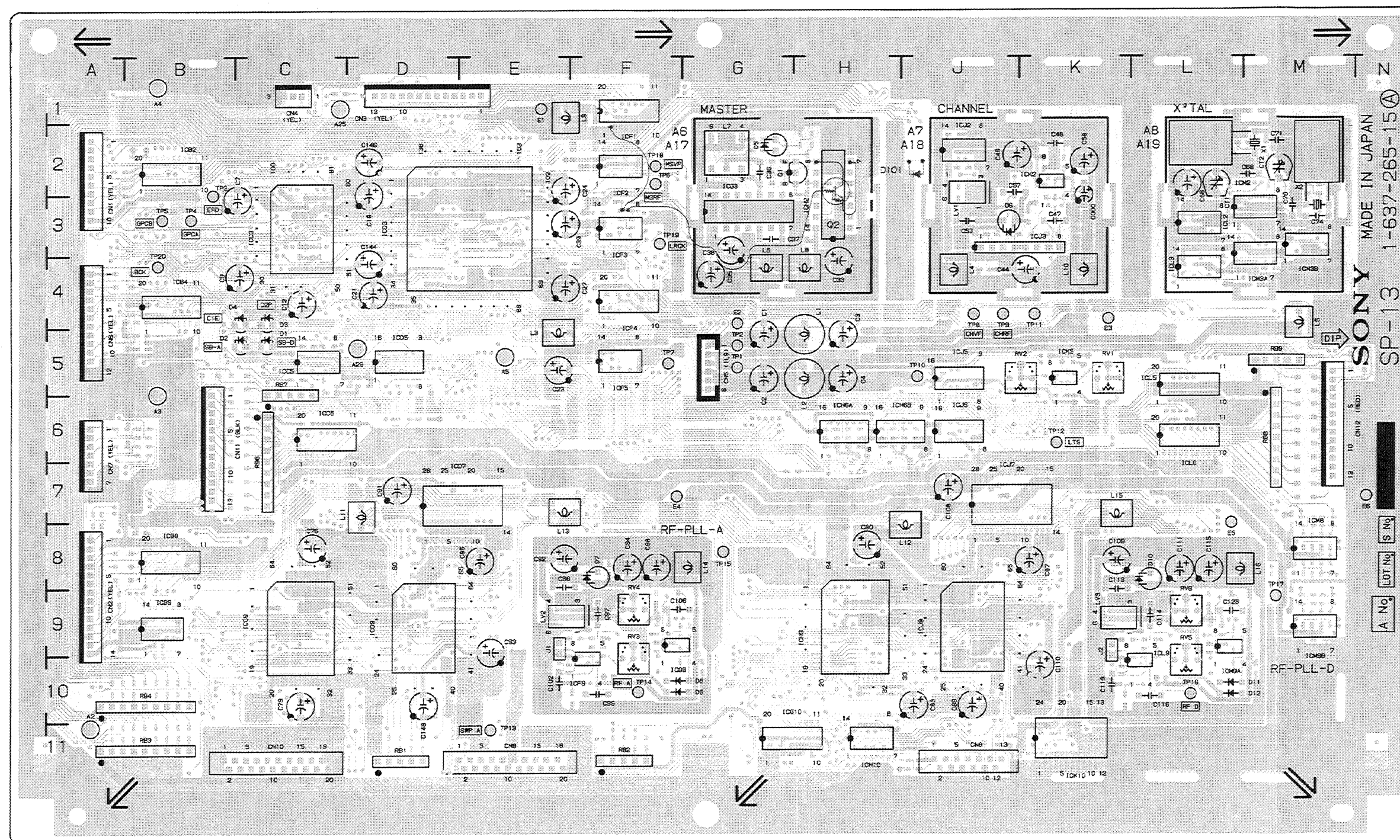
B-37-2(d)

D1	C-5	ICJ3	J-3	X1	M-2
D2	B-5	ICJ5	J-5	X2	M-3
D3	C-4	ICJ6	J-6		
D4	B-4	ICJ7	J-7		
D5	G-2	ICJ9	J-9		
D6	J-3	ICK2	K-2		
D7	F-8	ICK5	K-5		
D8	F-10	ICL2	L-3		
D9	F-10	ICL3	L-4		
D10	L-8	ICL5	L-5		
D11	L-10	ICL6	L-6		
D12	L-10	ICL9	L-9		
E1	E-1	ICM2	M-2		
E2	G-4	ICM3A	M-4		
E3	K-4	ICM3B	M-4		
E4	F-7	ICM8	M-8		
E5	L-7	ICM9A	L-9		
E6	N-7	ICM9B	M-9		
		Q1	G-2		
ICB2	B-2	RV1	K-5		
ICB4	B-4	RV2	J-5		
ICB8	B-8	RV3	F-9		
ICB9	B-9	RV4	F-9		
ICC3	C-3	RV5	L-9		
ICC5	C-5	RV6	L-9		
ICC6	C-6				
ICC9	C-9				
ICD3	D-3	TP1	G-5		
ICD5	D-5	TP2	G-5		
ICD7	D-7	TP3	B-2		
ICD9	D-9	TP4	B-3		
ICE10	E-10	TP5	B-3		
ICF1	F-1	TP6	F-2		
ICF2	F-2	TP7	F-5		
ICF3	F-3	TP8	J-4		
ICF4	F-4	TP9	J-4		
ICF5	F-5	TP10	J-5		
ICF9	F-10	TP11	K-4		
ICG3	G-2	TP12	K-6		
ICG9	F-10	TP13	E-11		
ICG10	G-10	TP14	F-10		
ICH2	H-2	TP15	G-8		
ICH6A	H-6	TP16	L-10		
ICH6B	H-6	TP17	M-9		
ICH9	H-9	TP18	F-2		
ICH10	H-11	TP19	F-3		
ICJ2	J-2	TP20	B-4		

B-38-2(d)

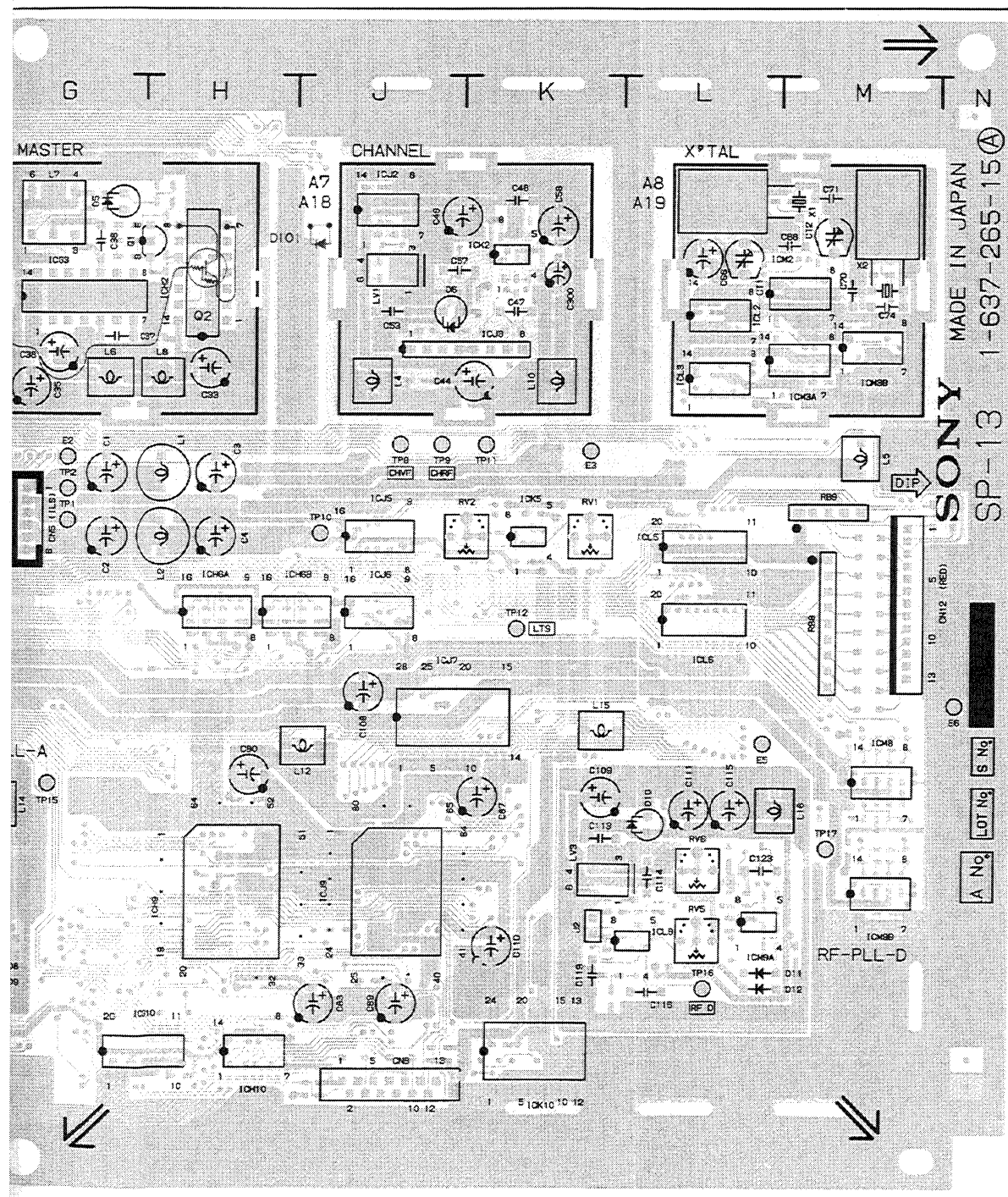
SP-13 BOARD (PCM-7030)
(1-637-265-15)
Component Side

Serial No. UC 25181 and higher
EK 55041 and higher



Applied Serial No. UC 25471 and higher EK 55501 and higher	
Parts that have been soldered.	ICF1-2 — ICF3-11 ICF3-10 — Q2(Base)
Parts that have been added.	Q2

Applied Serial No. UC 30530 and higher EK 55671 and higher	
Parts that have been added.	D101

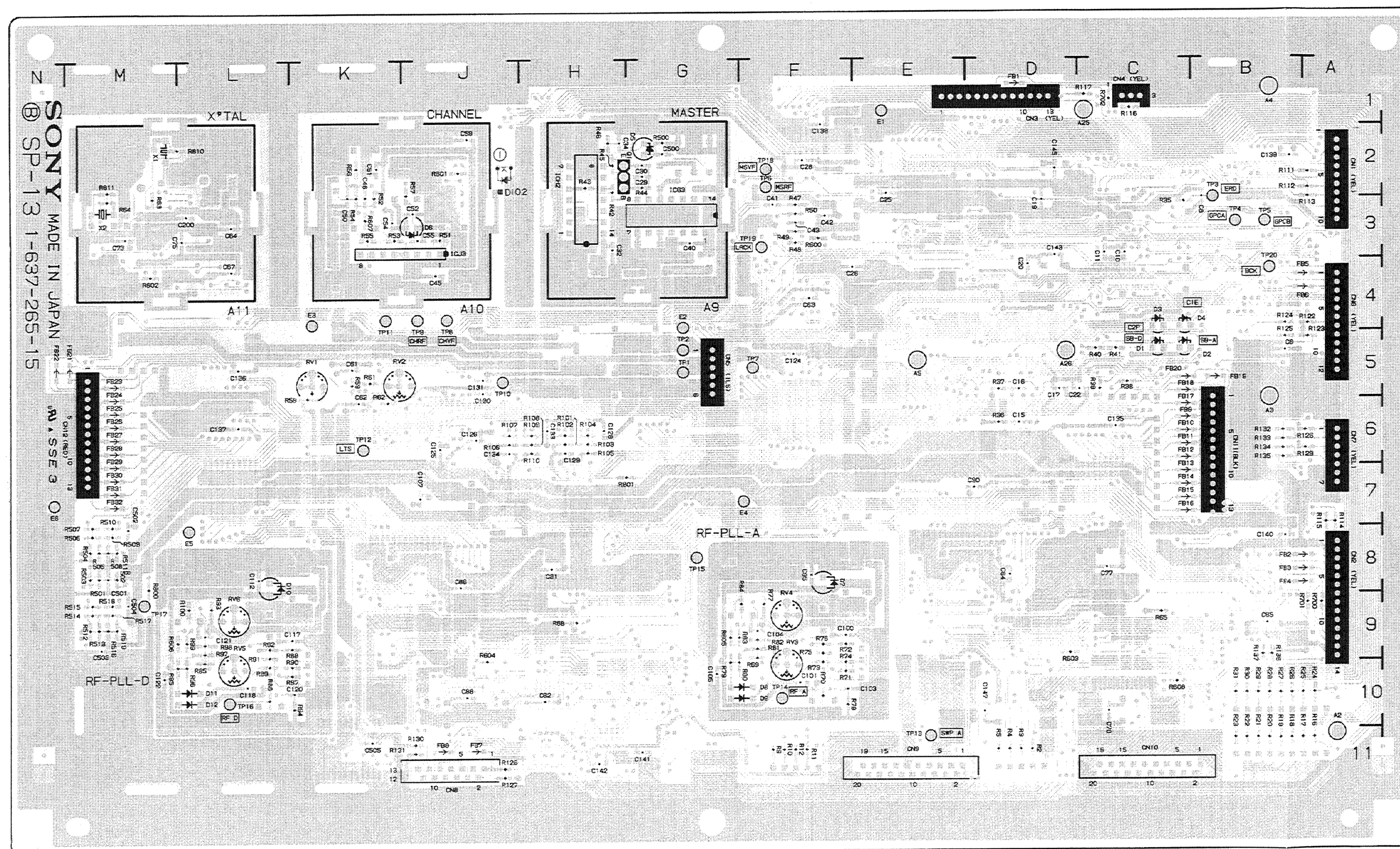


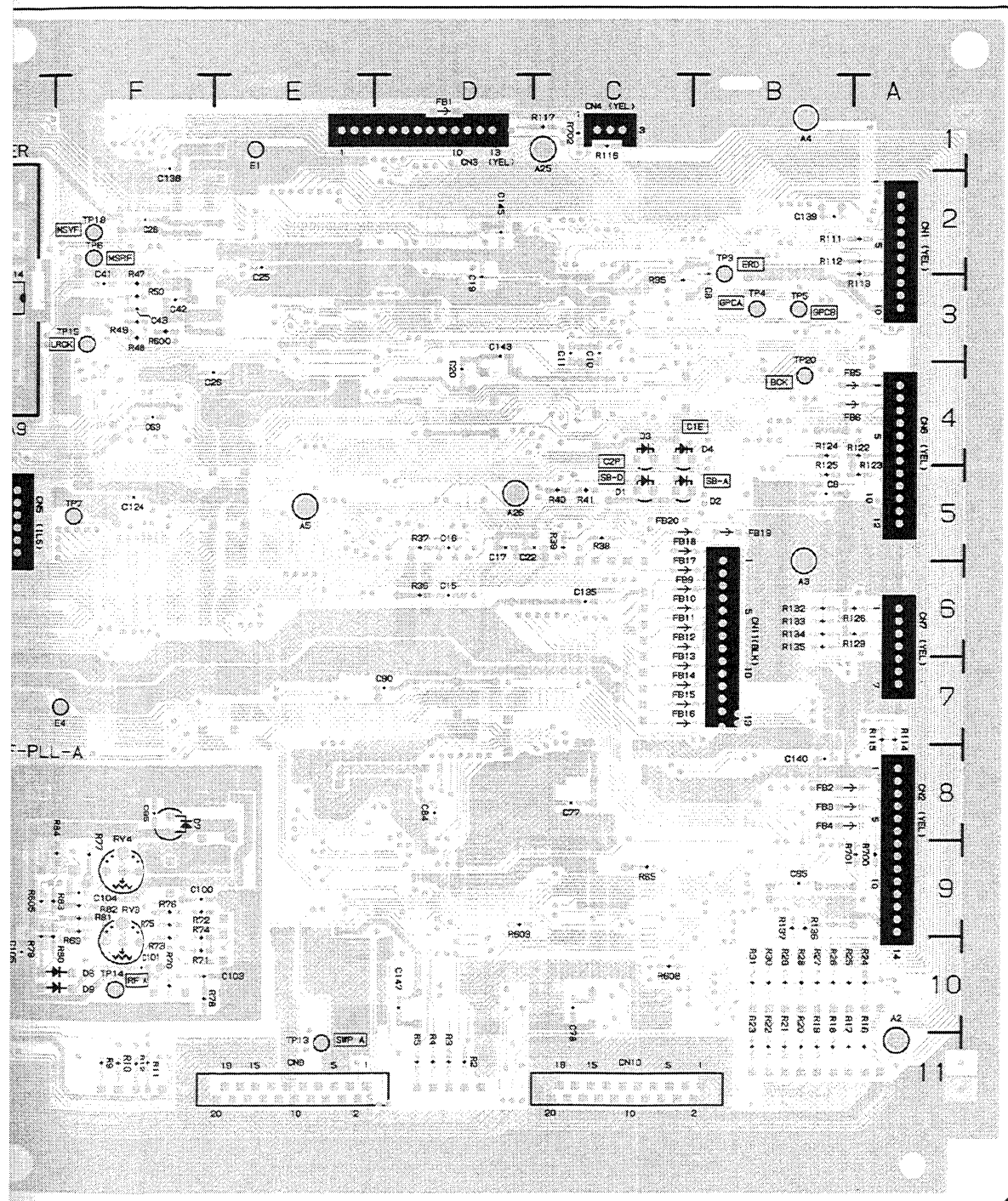
D1	C-5	ICJ7	J-7
D2	B-5	ICJ9	J-9
D3	C-4	ICK2	K-2
D4	B-4	ICK5	K-5
D5	G-2	ICK10	K-10
D6	J-3	ICL2	L-3
D7	F-8	ICL3	L-4
D8	F-10	ICL5	L-5
D9	F-10	ICL6	L-6
D10	L-8	ICL9	L-9
D11	L-10	ICM2	M-2
D12	L-10	ICM3A	M-4
		ICM3B	M-4
E1	E-1	ICM8	M-8
E2	G-4	ICM9A	L-9
E3	K-4	ICM9B	M-9
E4	F-7		
E5	L-8	Q1	G-2
E6	N-7	Q2	H-2
ICB2	B-2	RV1	K-5
ICB4	B-4	RV2	J-5
ICB8	B-8	RV3	F-9
ICB9	B-9	RV4	F-9
ICC3	C-3	RV5	L-9
ICC5	C-5	RV6	L-9
ICC6	C-6		
ICC9	C-9	TP1	G-5
ICD3	D-3	TP2	G-5
ICD5	D-5	TP3	B-2
ICD7	D-7	TP4	B-3
ICD9	D-9	TP5	B-3
ICF1	F-1	TP6	F-2
ICF2	F-2	TP7	F-5
ICF3	F-3	TP8	J-4
ICF4	F-4	TP9	J-4
ICF5	F-5	TP10	J-5
ICF9	F-10	TP11	K-4
ICG3	G-2	TP12	K-6
ICG9	F-10	TP13	E-11
ICG10	G-10	TP14	F-10
ICH2	H-2	TP15	G-8
ICH6A	H-6	TP16	L-10
ICH6B	H-6	TP17	M-9
ICH9	H-9	TP18	F-2
ICH10	H-11	TP19	F-3
ICJ2	J-2	TP20	B-4
ICJ3	J-3		
ICJ5	J-5	X1	M-2
ICJ6	J-6	X2	M-3

Applied Serial No. UC 25471 and higher EK 55501 and higher	
Parts that have been soldered.	ICF1-2 — ICF3-11 ICF3-10 — Q2 (Base)
Parts that have been added.	Q2

Applied Serial No. UC 30030 and higher EK 55671 and higher	
Parts that have been added.	Q101

Serial No.	UC 25181 and higher
	EK 55041 and higher





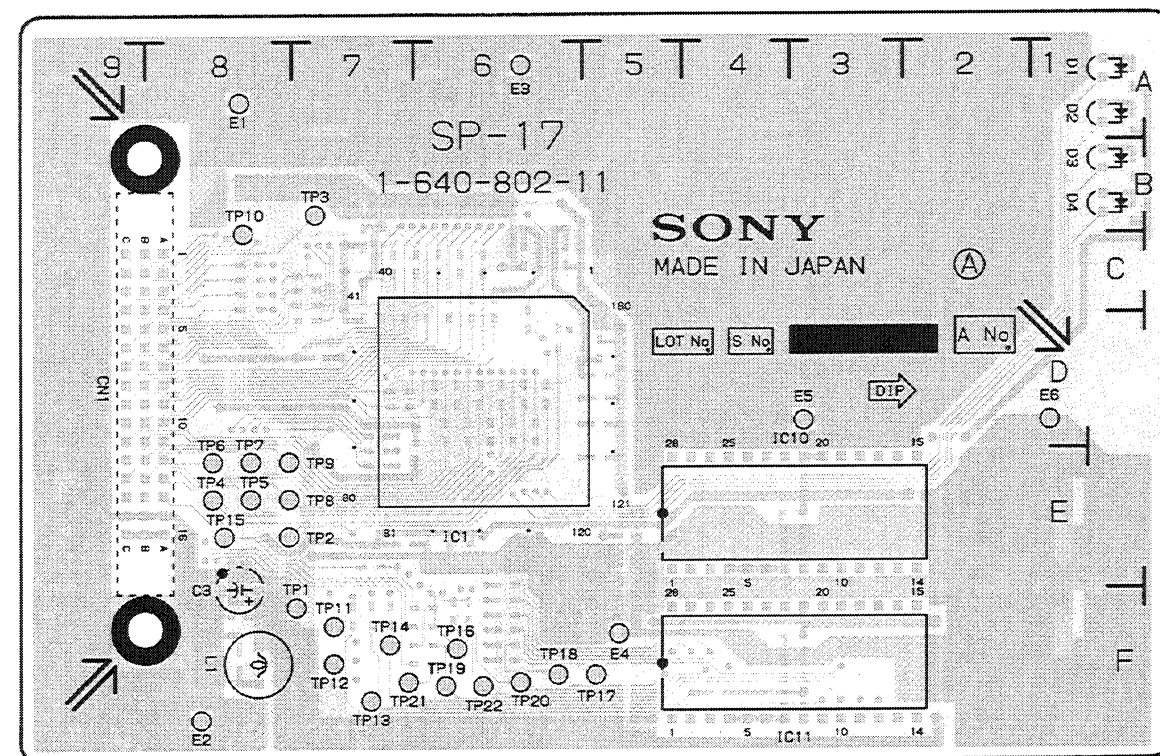
D1	C-5	ICJ5	J-5	X1	M-2
D2	B-5	ICJ6	J-6	X2	M-3
D3	C-4	ICJ7	J-7		
D4	B-4	ICJ9	J-9		
D5	G-2	ICK2	K-2		
D6	J-3	ICK5	K-5		
D7	F-8	ICK10	K-10		
D8	F-10	ICL2	L-3		
D9	F-10	ICL3	L-4		
D10	L-8	ICL5	L-5		
D11	L-10	ICL6	L-6		
D12	L-10	ICL9	L-9		
		ICM2	M-2		
E1	E-1	ICM3A	M-4		
E2	G-4	ICM3B	M-4		
E3	K-4	ICM8	M-8		
E4	F-7	ICM9A	L-9		
E5	L-8	ICM9B	M-9		
E6	N-7				
		Q1	G-2		
ICB2	B-2				
ICB4	B-4	RV1	K-5		
ICB8	B-8	RV2	J-5		
ICB9	B-9	RV3	F-9		
ICC3	C-3	RV4	F-9		
ICC5	C-5	RV5	L-9		
ICC6	C-6	RV6	L-9		
ICC9	C-9				
ICD3	D-3	TP1	G-5		
ICD5	D-5	TP2	G-5		
ICD7	D-7	TP3	B-2		
ICD9	D-9	TP4	B-3		
ICF1	F-1	TP5	B-3		
ICF2	F-2	TP6	F-2		
ICF3	F-3	TP7	F-5		
ICF4	F-4	TP8	J-4		
ICF5	F-5	TP9	J-4		
ICF9	F-10	TP10	J-5		
ICG3	G-2	TP11	K-4		
ICG9	F-10	TP12	K-6		
ICG10	G-10	TP13	E-11		
ICH2	H-2	TP14	F-10		
ICH6A	H-6	TP15	G-8		
ICH6B	H-6	TP16	L-10		
ICH9	H-9	TP17	M-9		
ICH10	H-11	TP18	F-2		
ICJ2	J-2	TP19	F-3		
ICJ3	J-3	TP20	B-4		

Applied Serial No. UC 30030 and higher	
EK 55571 and higher	
Jumpers that have been cut	(See the board.)
Part marked With ■ that have been installed on the Solder Side	■ D102

SP-17B/17C

SP-17B/17C

SP-17B/17C BOARD (PCM-7030)
(1-640-802-11)
Component Side

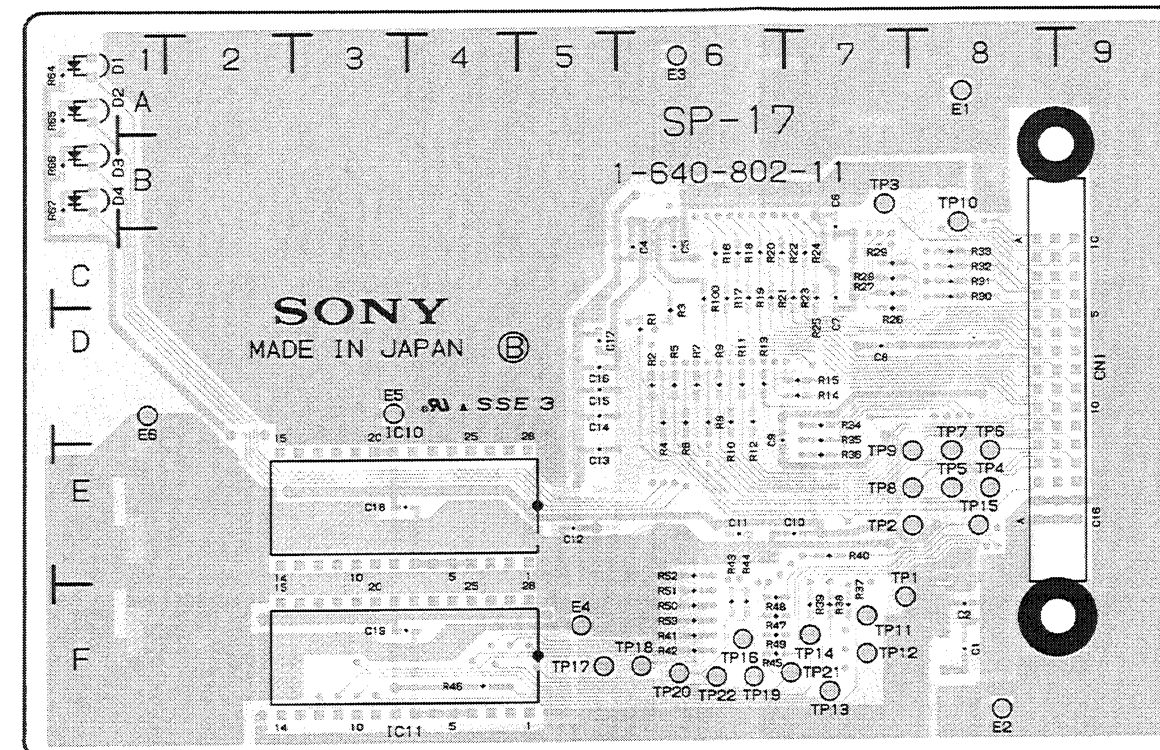


SOLDER SIDE PATTERN 1-640-802-11

D1	A-1	TP8	E-7
D2	A-1	TP9	E-7
D3	B-1	TP10	B-8
D4	B-1	TP11	E-7
		TP12	F-7
E1	A-8	TP13	F-7
E2	F-8	TP14	F-7
E3	A-6	TP15	E-8
E4	F-5	TP16	F-6
E5	D-1	TP17	F-5
		TP18	F-6
IC1	E-6	TP19	F-6
IC10	E-3	TP20	F-6
IC11	F-3	TP21	F-6
TP1	E-7		
TP2	E-7		
TP3	B-7		
TP4	D-8		
TP5	D-8		
TP6	D-8		
TP7	D-8		

B-41

Solder Side



SOLDER SIDE PATTERN 1-640-802-11

B-42

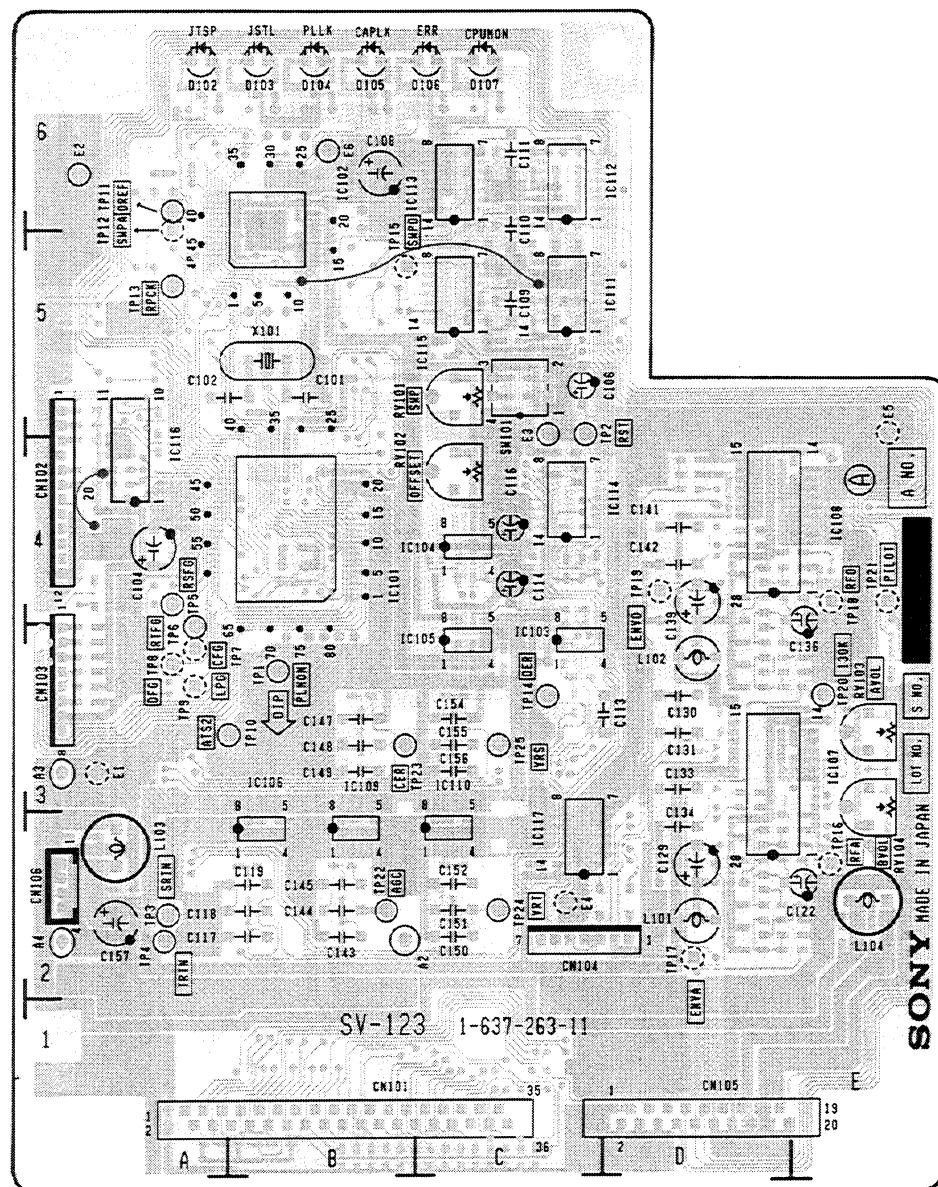
SV-123

SV-123

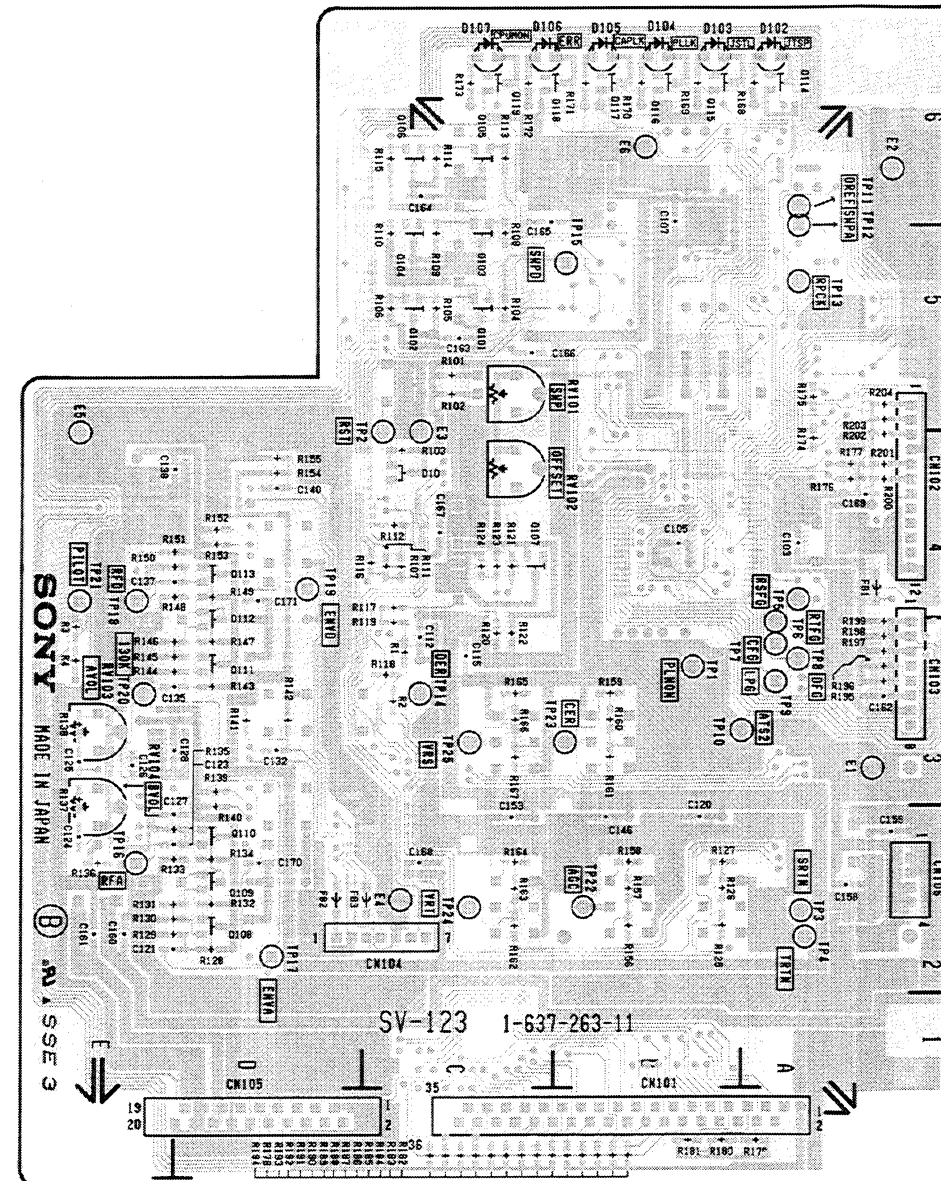
SV-123 BOARD (PCM-7030)
(1-637-263-11)
Component Side

Serial No. UC 20001 to 20025
EK 50001 to 50060

Solder Side



D102	A-6	TP22	B-2
D103	B-6	TP23	B-3
D104	B-6	TP24	C-2
D105	B-6	TP25	C-3
D106	C-6		
D107	C-6	X101	B-5
E2	A-6		
E3	C-4		
E6	B-6		
IC101	B-4		
IC102	B-6		
IC103	C-3		
IC104	B-4		
IC105	B-3		
IC106	B-3		
IC107	B-3		
IC108	B-4		
IC109	B-3		
IC110	C-3		
IC111	D-5		
IC112	D-6		
IC113	C-6		
IC114	D-4		
IC115	C-5		
IC116	A-4		
IC117	C-2		
RV101	B-5		
RV102	B-4		
RV103	B-3		
RV104	B-2		
SW101	C-4		
TP1	B-3		
TP2	D-4		
TP3	A-2		
TP4	A-2		
TP5	A-4		
TP6	A-3		
TP10	B-3		
TP11	A-6		
TP13	A-5		
TP14	C-3		
TP20	E-3		



D101	C-4		
E1	A-3		
E4	C-2		
E5	E-5		
Q101	C-5		
Q102	C-5		
Q103	C-5		
Q104	C-5		
Q105	C-6		
Q106	C-6		
Q107	C-4		
Q108	D-2		
Q109	D-2		
Q110	D-2		
Q111	D-3		
Q112	D-4		
Q113	D-4		
Q114	A-6		
Q115	B-6		
Q116	B-6		
Q117	B-6		
Q118	B-6		
Q119	C-6		
TP7	B-3		
TP8	A-3		
TP9	A-3		
TP12	A-5		
TP15	B-5		
TP16	E-2		
TP17	D-2		
TP18	E-4		
TP19	D-4		
TP21	E-4		

Applied Serial No. UC 20001 to 20025 EK 50001 to 50060	
Jumpers that have been soldered.	IC111-10 — IC102-12 IC116-18 — CN102-7

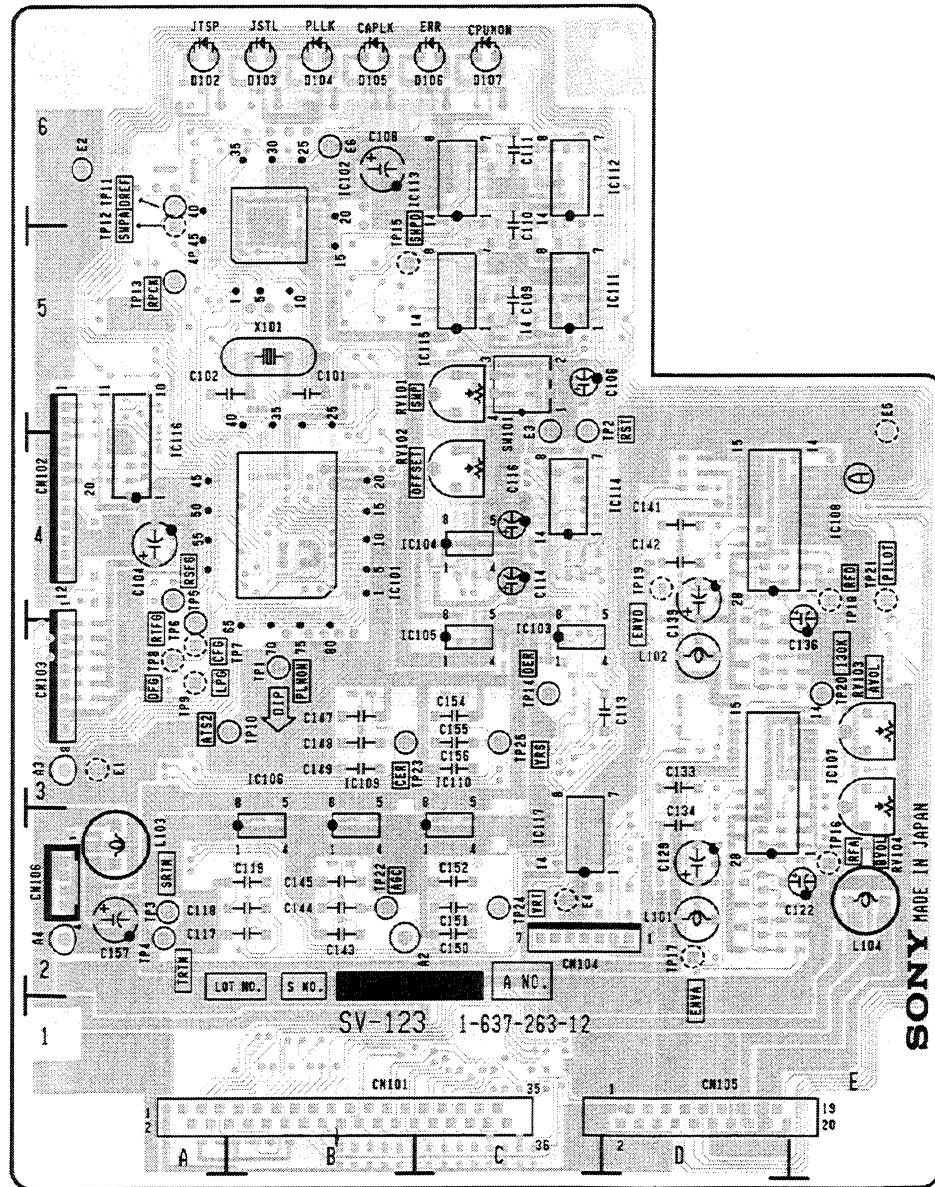
SV-123

SV-123

SV-123 BOARD (PCM-7030)
(1-637-263-12)
Component Side

Serial No. UC 20026 and higher
EK 50061 and higher

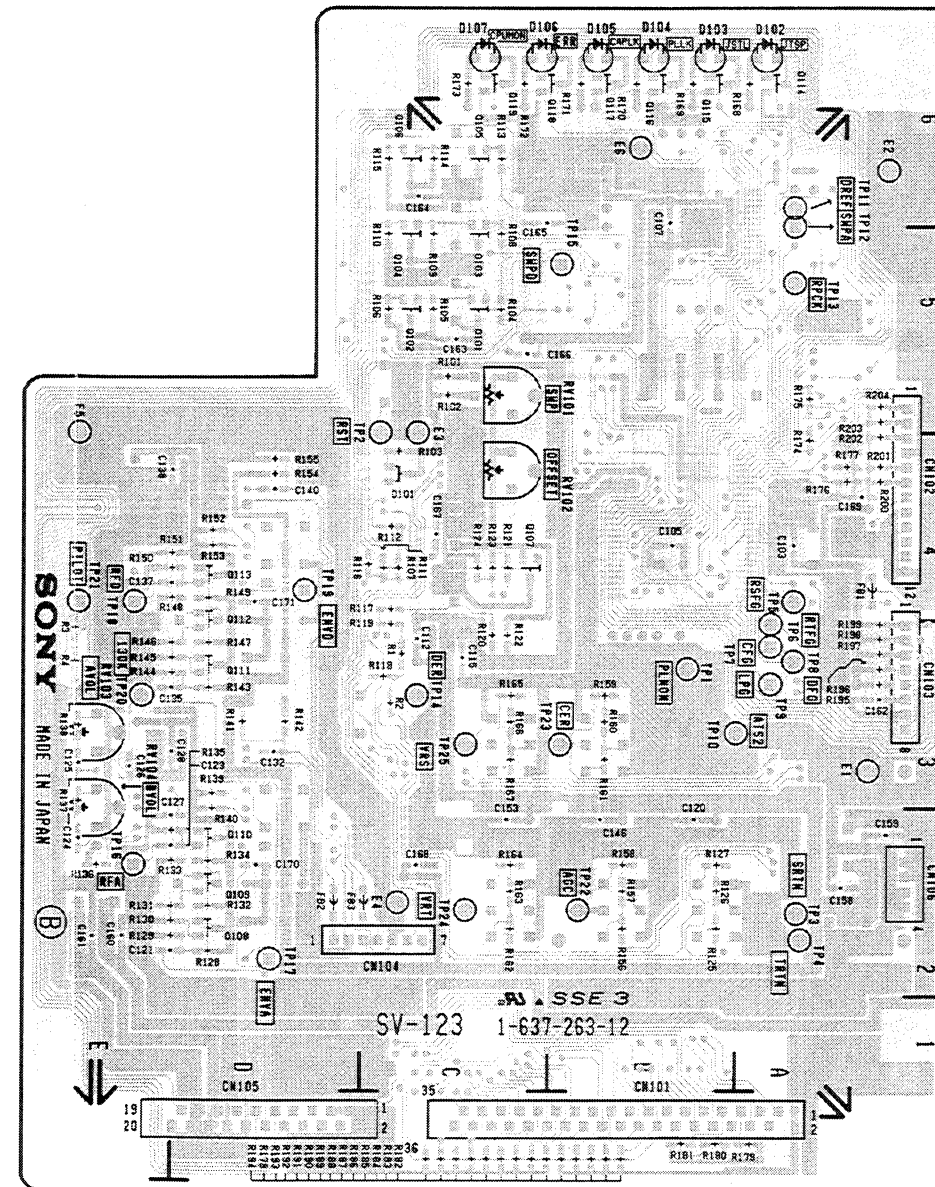
Solder Side



SOLDER SIDE PATTERN

1-637-263-12

D102	A-6	TP22	B-2
D103	B-6	TP23	B-3
D104	B-6	TP24	C-2
D105	B-6	TP25	C-3
D106	C-6		
D107	C-6	X101	B-5
E2	A-6		
E3	C-4		
E6	B-6		
IC101	B-4		
IC102	B-6		
IC103	C-3		
IC104	B-4		
IC105	B-3		
IC106	B-3		
IC107	E-3		
IC108	E-4		
IC109	B-3		
IC110	C-3		
IC111	D-6		
IC112	D-6		
IC113	C-6		
IC114	D-4		
IC115	C-5		
IC116	A-4		
IC117	C-2		
RV101	B-5		
RV102	B-4		
RV103	E-3		
RV104	E-2		
SW101	C-4		
TP1	B-3		
TP2	D-4		
TP3	A-2		
TP4	A-2		
TP5	A-4		
TP6	A-3		
TP10	B-3		
TP11	A-6		
TP13	A-5		
TP14	C-3		
TP20	E-3		



SOLDER SIDE PATTERN

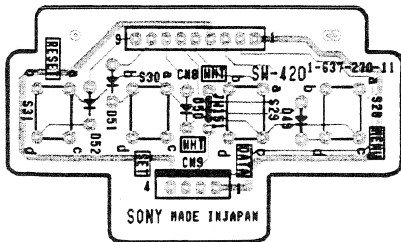
1-637-263-12

D101	C-4		
E1	A-3		
E4	C-2		
E5	E-5		
Q101	C-5		
Q102	C-5		
Q103	C-5		
Q104	C-5		
Q105	C-6		
Q106	C-6		
Q107	C-4		
Q108	D-2		
Q109	D-2		
Q110	D-2		
Q111	D-3		
Q112	D-4		
Q113	D-4		
Q114	A-6		
Q115	B-6		
Q116	B-6		
Q117	B-6		
Q118	B-6		
Q119	C-6		
TP7	B-3		
TP8	A-3		
TP9	A-3		
TP12	A-5		
TP15	B-5		
TP16	E-2		
TP17	D-2		
TP18	E-4		
TP19	D-4		
TP21	E-4		



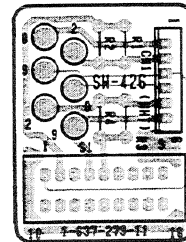
SW-420/426/452

SW-420 BOARD (PCM-7030)
(1-637-270-11)
Component Side



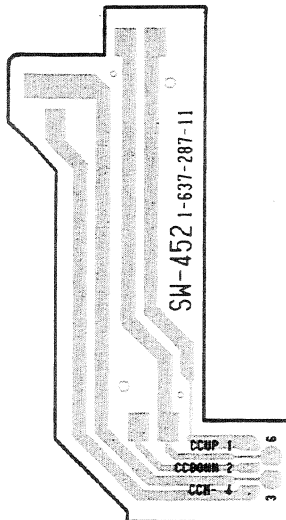
■ SOLDER SIDE PATTERN 1-637-270-11

SW-426 BOARD (PCM-7030)
(1-637-279-11)
Component Side



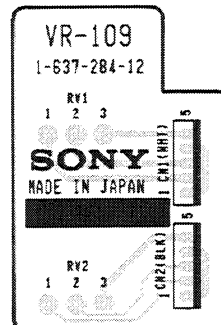
■ SOLDER SIDE PATTERN 1-637-279-11

SW-452 BOARD (PCM-7030)
(1-637-287-11)
Component Side



VR-109 BOARD (PCM-7030)
(1-637-284-12)
Component Side

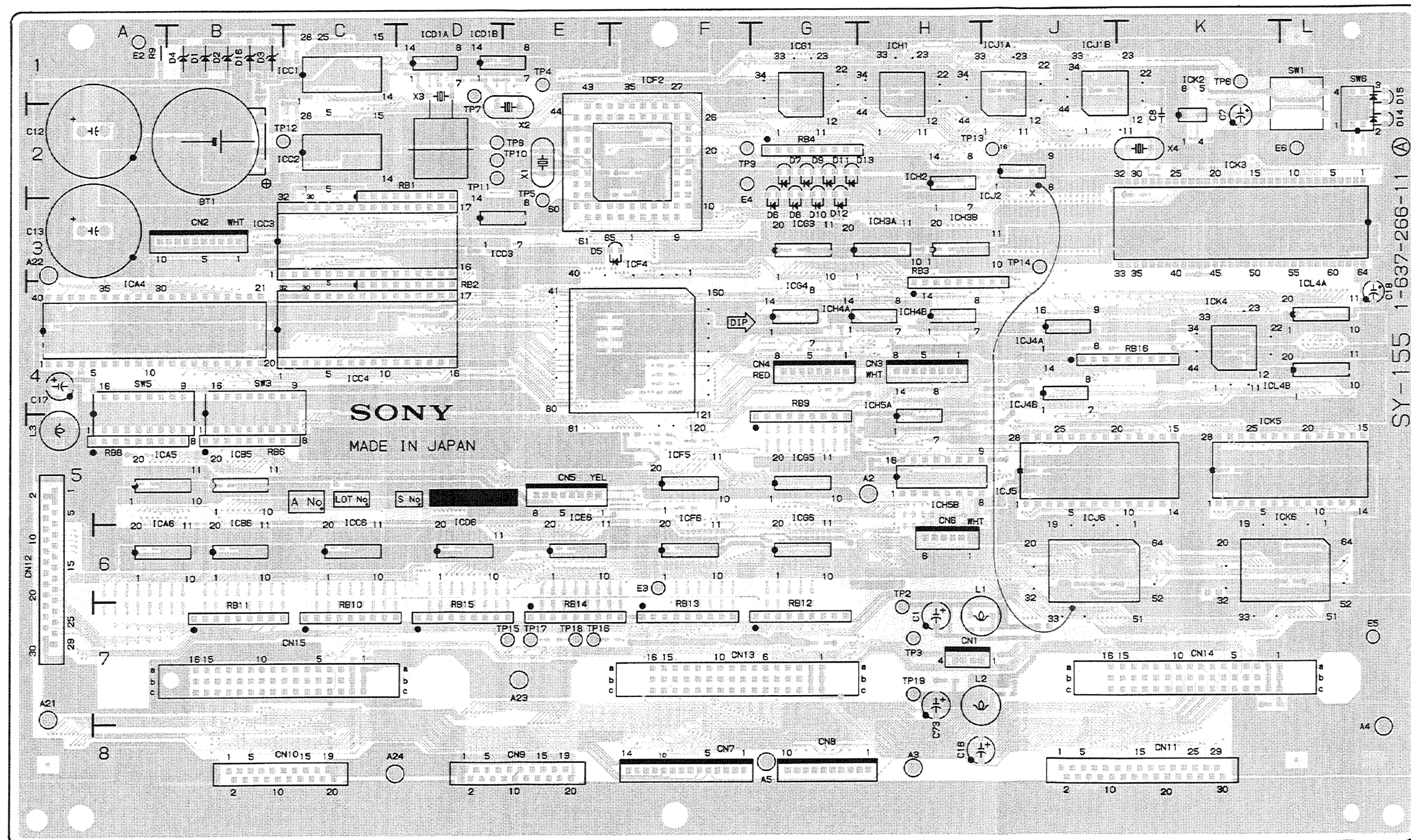
Serial No. UC 20001 to 20025
EK 50001 to 50060



SOLDER SIDE PATTERN 1-637-284-12

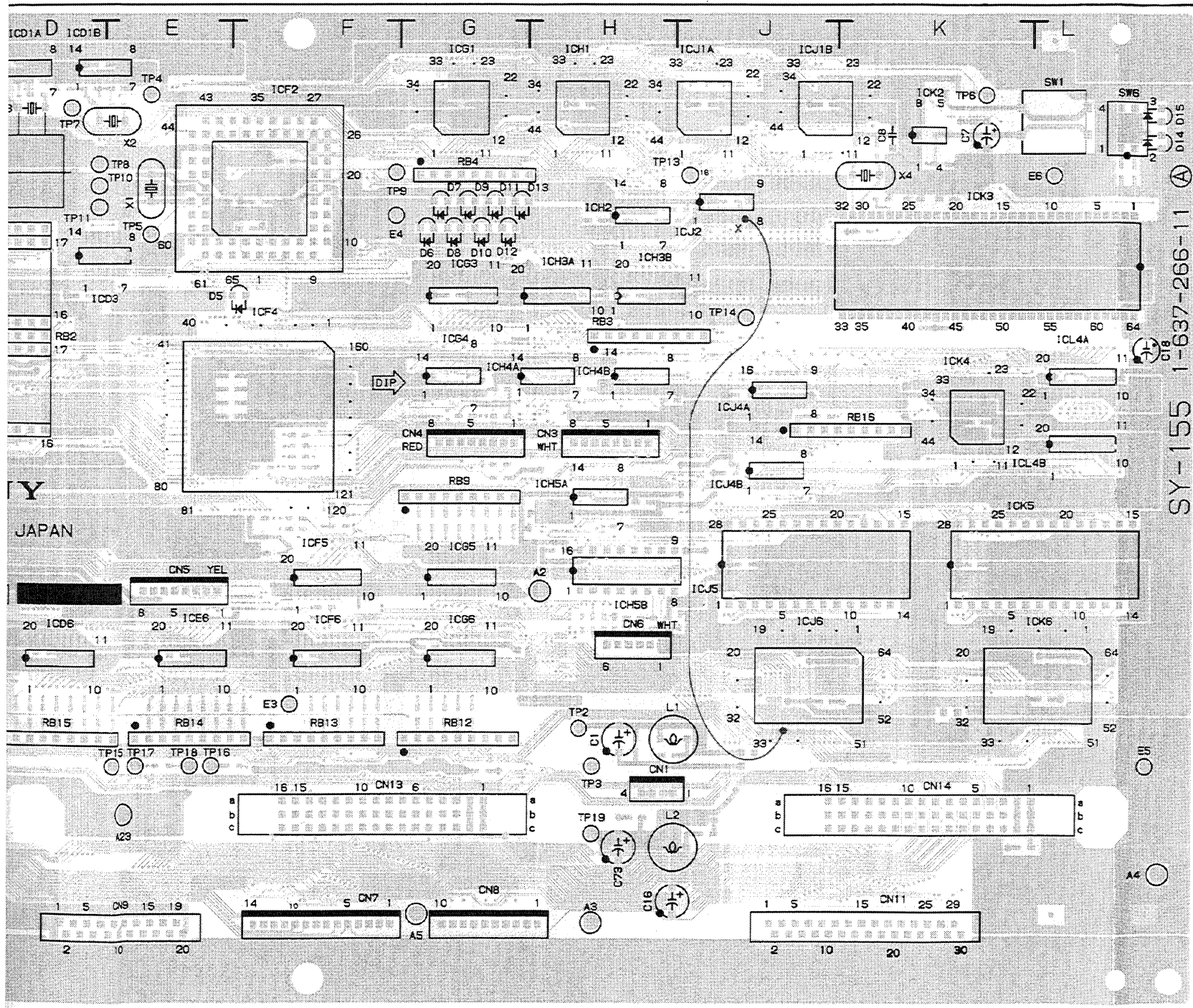
SY-155B BOARD (PCM-7030)
(1-637-266-11)
Component Side

Serial No. UC 20001 to 20025
EK 50001 to 50060



SOLDER SIDE PATTERN 1-637-266-11

001 to 20025
001 to 50060



D1	B-1	ICH1	H-1	X1	E-2
D2	B-1	ICH2	H-2	X2	E-2
D3	B-1	ICH3A	H-3	X3	D-1
D4	B-1	ICH3B	H-3	X4	K-2
D5	E-3	ICH4A	G-4		
D6	G-3	ICH4B	H-4		
D7	G-2	ICH5A	H-5		
D8	G-3	ICH5B	H-5		
D9	G-2	ICJ1A	J-1		
D10	G-3	ICJ1B	J-1		
D11	G-2	ICJ2	J-3		
D12	G-3	ICJ4A	J-4		
D13	G-2	ICJ4B	J-4		
D14	L-2	ICJ5	J-5		
D15	L-2	ICJ6	J-6		
D16	B-1	ICK2	K-1		
		ICK3	K-2		
E2	A-1	ICK4	K-4		
E3	F-6	ICK5	K-5		
E4	F-3	ICK6	L-6		
E5	L-7	ICL4A	L-4		
E6	L-2	ICL4B	L-4		
ICA4	A-4	SW1	L-1		
ICA5	A-5	SW3	B-4		
ICA6	A-6	SW5	A-4		
ICB5	B-5	SW6	L-1		
ICB6	B-6				
ICC1	C-1	TP2	H-6		
ICC2	C-2	TP3	H-7		
ICC3	B-3	TP4	E-1		
ICC4	C-4	TP5	E-3		
ICC6	C-6	TP6	K-1		
ICD1A	D-1	TP7	D-2		
ICD1B	D-1	TP8	E-2		
ICD3	D-3	TP9	F-2		
ICD6	D-6	TP10	E-2		
ICE6	E-6	TP11	D-2		
ICF2	F-1	TP12	C-2		
ICF4	F-3	TP13	H-2		
ICF5	F-5	TP14	J-3		
ICF6	F-6	TP15	E-7		
ICG1	G-1	TP16	E-7		
ICG3	G-3	TP17	E-7		
ICG4	G-4	TP18	E-7		
ICG5	G-5	TP19	H-7		
ICG6	G-6				

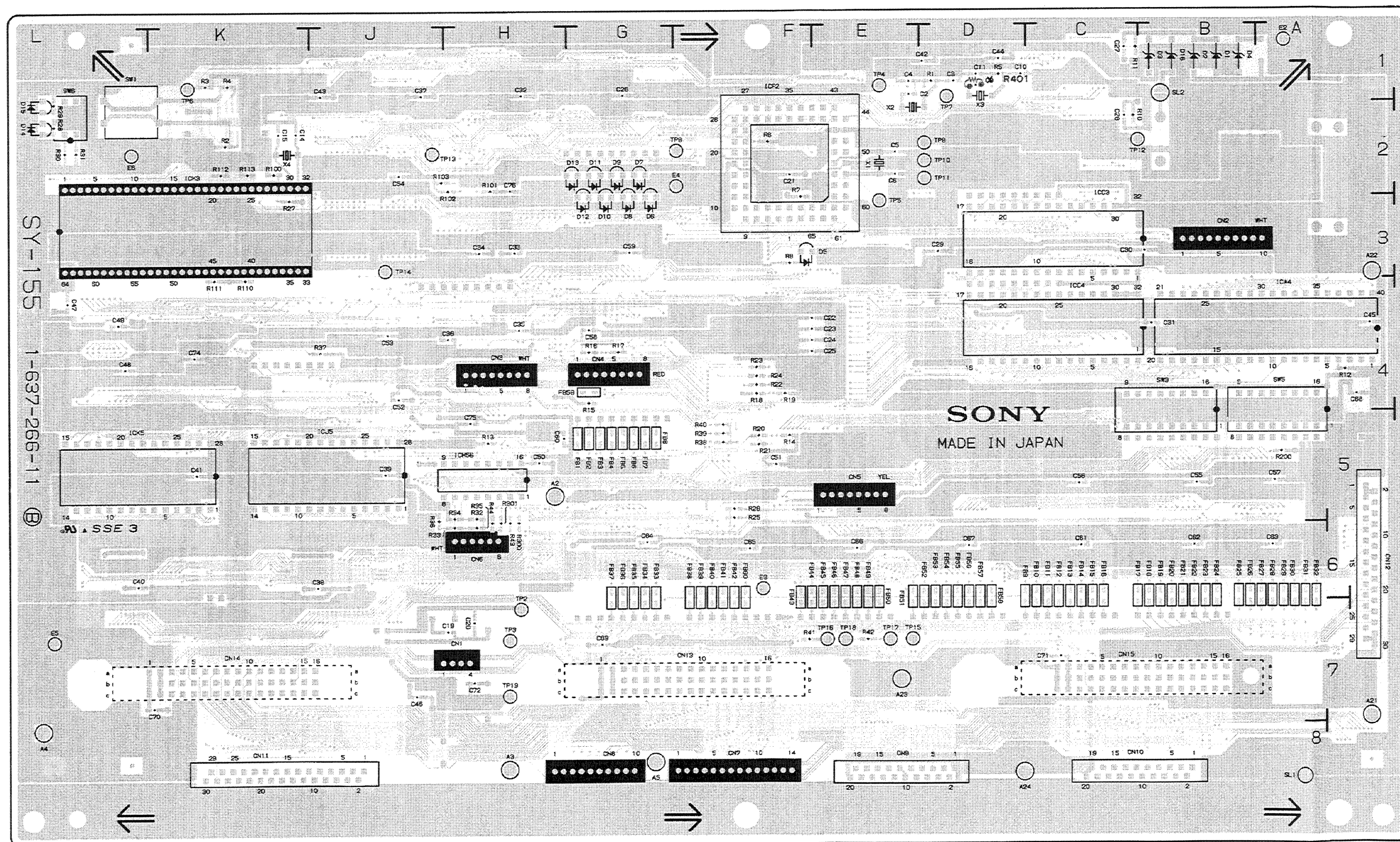
Applied Serial No. UC 20001 to 20025
EK 50001 to 50060

Jumpers that have been
soldered or cut.

ICJ2-6 → ICJ6-37
ICJ2-7 → ICJ6-37

SY-155B BOARD (PCM-7030)
(1-637-266-11)
Solder Side

Serial No. UC 20001 to 20025
EK 50001 to 50060



D1	B-1
D2	B-1
D3	B-1
D4	B-1
D5	E-3
D6	G-3
D7	G-2
D8	G-3
D9	G-2
D10	G-3
D11	G-2
D12	G-3
D13	G-2
D14	L-2
D15	L-2
D16	B-1
E2	A-1
E3	F-6
E4	F-3
E5	L-7
E6	L-2
ICA4	A-4
ICA5	A-5
ICA6	A-5
ICB5	B-5
ICB6	B-6
ICC1	C-1
ICC2	C-2
ICC3	B-3
ICC4	C-4
ICC6	C-6
ICD1A	D-1
ICD1B	D-1
ICD3	D-3
ICD6	D-6
ICE6	E-5
ICF2	F-1
ICF4	F-3
ICF5	F-5
ICF6	F-5
ICG1	G-1
ICG3	G-3
ICG4	G-4
ICG5	G-5
ICG6	G-6

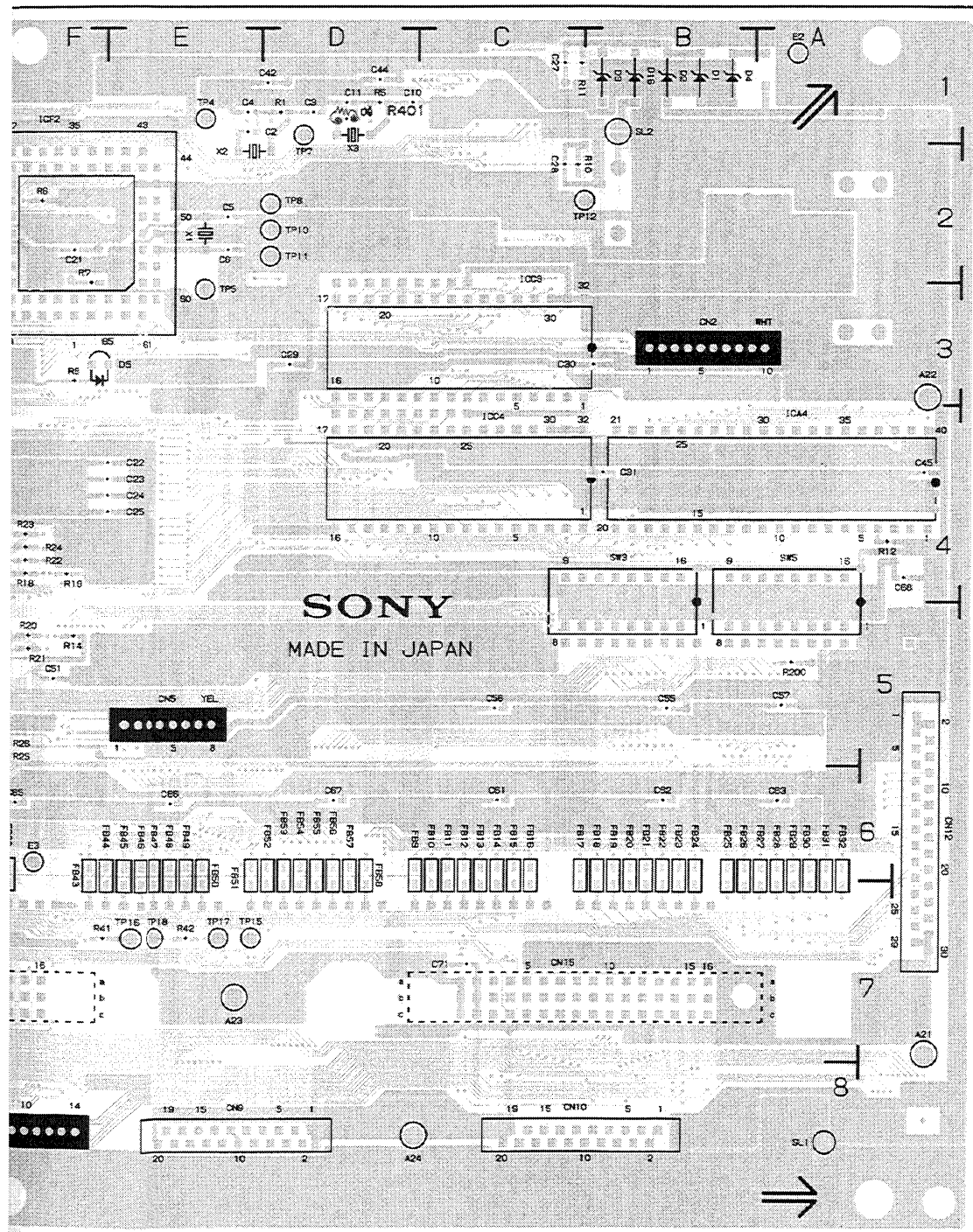
Applied Serial No. UC 20001 to 20025
EK 50001 to 50060

Parts that have been changed. C9 → R401

SY-155B



SY-155B



D1	B-1	ICH1	H-1	X1	E-2
D2	B-1	ICH2	H-2	X2	E-2
D3	B-1	ICH3A	H-3	X3	D-1
D4	B-1	ICH3B	H-3	X4	K-2
D5	E-3	ICH4A	G-4		
D6	G-3	ICH4B	H-4		
D7	G-2	ICH5A	H-5		
D8	G-3	ICH5B	H-5		
D9	G-2	ICJ1A	J-1		
D10	G-3	ICJ1B	J-1		
D11	G-2	ICJ2	J-3		
D12	G-3	ICJ4A	J-4		
D13	G-2	ICJ4B	J-4		
D14	L-2	ICJ5	J-5		
D15	L-2	ICJ6	J-5		
D16	B-1	ICK2	K-1		
		ICK3	K-2		
E2	A-1	ICK4	K-4		
E3	F-6	ICK5	K-5		
E4	F-3	ICK6	L-5		
E5	L-7	ICL4A	L-4		
E6	L-2	ICL4B	L-4		
ICA4	A-4	SW1	L-1		
ICA5	A-5	SW3	B-4		
ICA6	A-5	SW5	A-4		
ICB5	B-5	SW6	L-1		
ICB6	B-6				
ICC1	C-1	TP2	H-6		
ICC2	C-2	TP3	H-7		
ICC3	B-3	TP4	E-1		
ICC4	C-4	TP5	E-3		
ICC6	C-6	TP6	K-1		
ICD1A	D-1	TP7	D-2		
ICD1B	D-1	TP8	E-2		
ICD3	D-3	TP9	F-2		
ICD6	D-6	TP10	E-2		
ICE6	E-6	TP11	D-2		
ICF2	F-1	TP12	C-2		
ICF4	F-3	TP13	H-2		
ICF5	F-5	TP14	J-3		
ICF6	F-5	TP15	E-7		
ICG1	G-1	TP16	E-7		
ICG3	G-3	TP17	E-7		
ICG4	G-4	TP18	E-7		
ICG5	G-5	TP19	H-7		
ICG6	G-6				

Applied Serial No. UC 20001 to 20025
EK 50001 to 50060

Parts that have been changed. C8 → R401

VR-109 BOARD (PCM-7030)

(1-637-284-13)

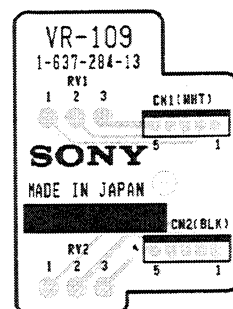
Component Side

Serial No. UC 20026 and higher
EK 50061 and higher

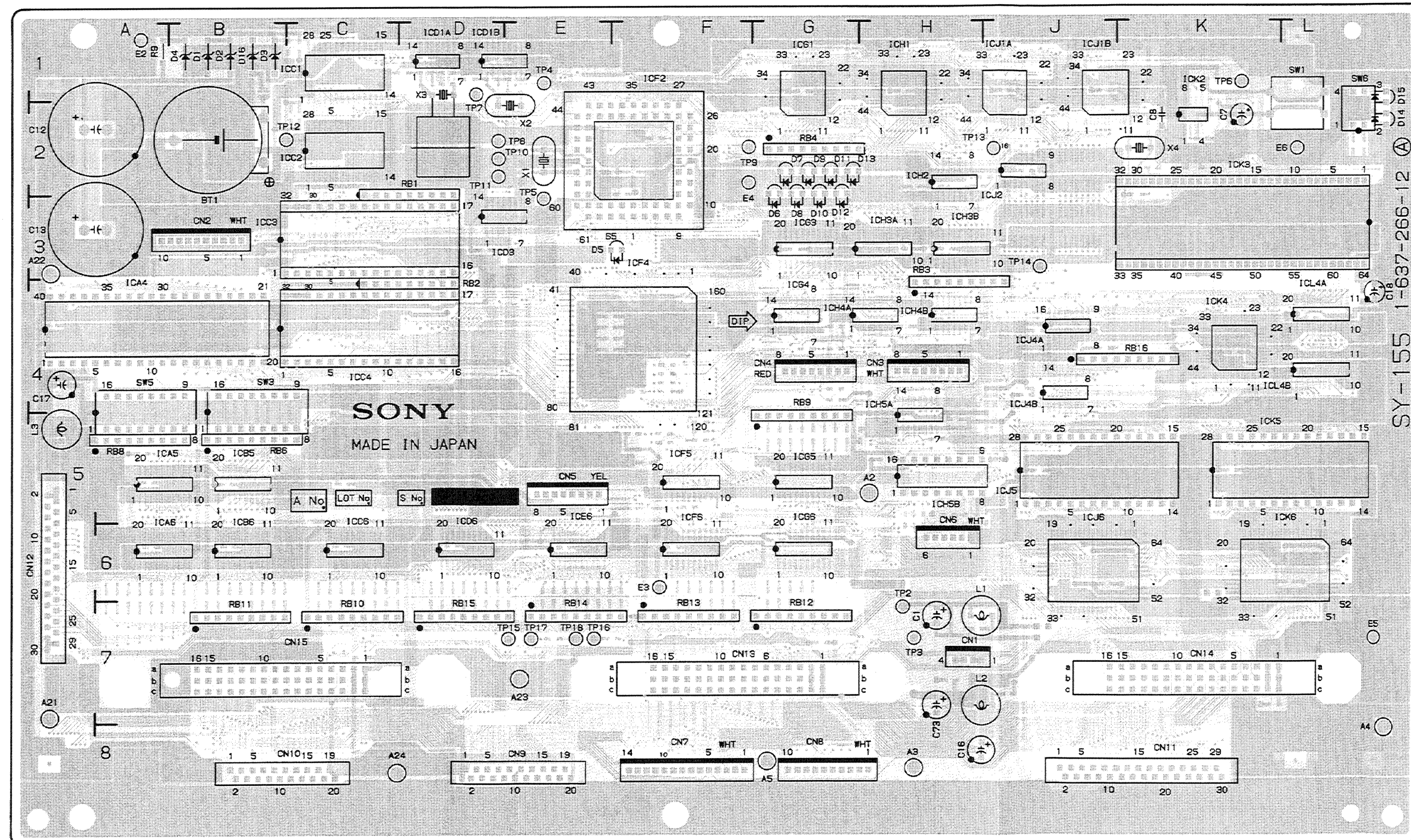
SY-155B BOARD (PCM-7030)

(1-637-266-12)

Component Side

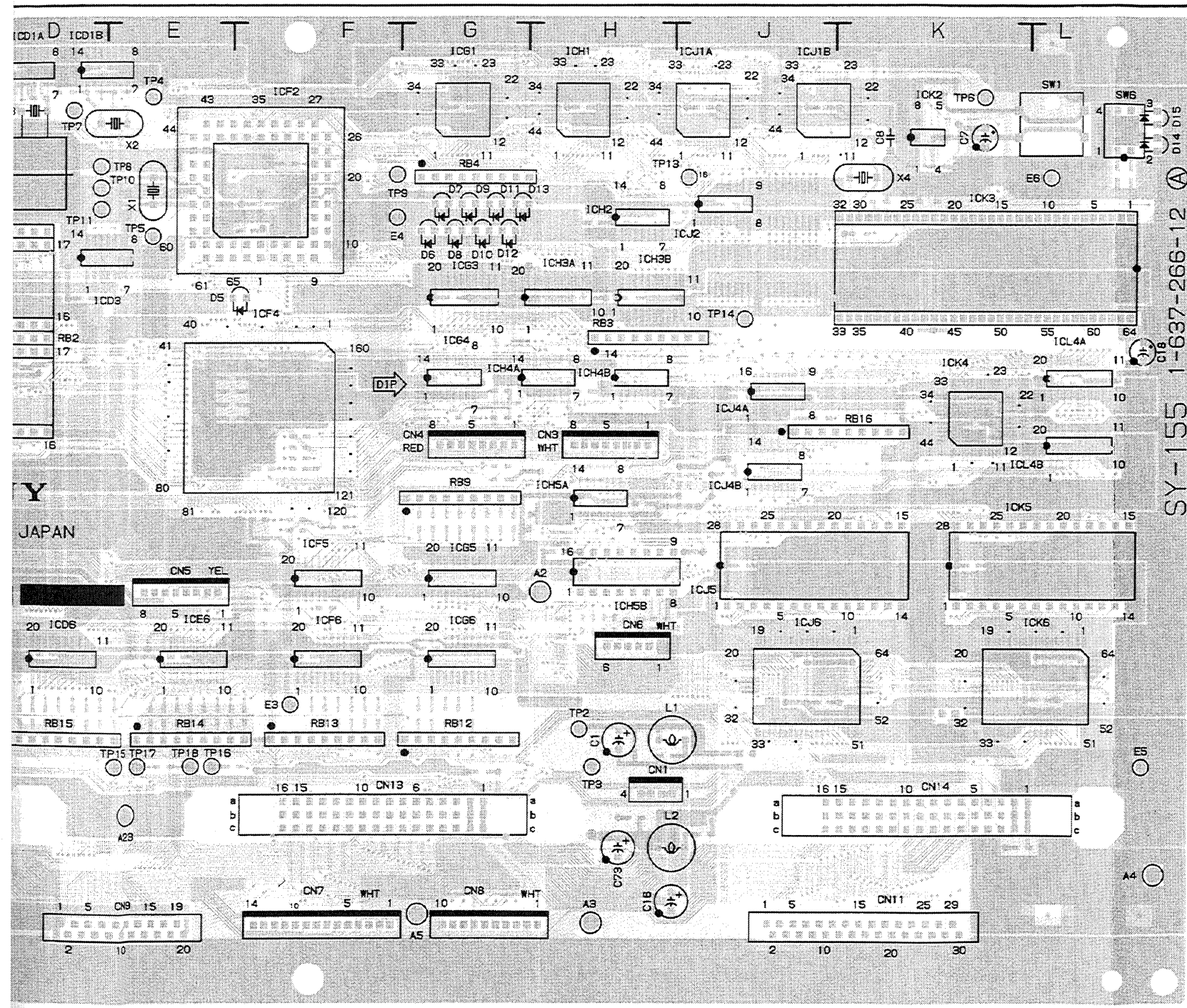
Serial No. UC 20026 and higher
EK 50061 and higher

SOLDER SIDE PATTERN 1-637-284-13



SOLDER SIDE PATTERN 1-637-266-12

026 and higher
061 and higher



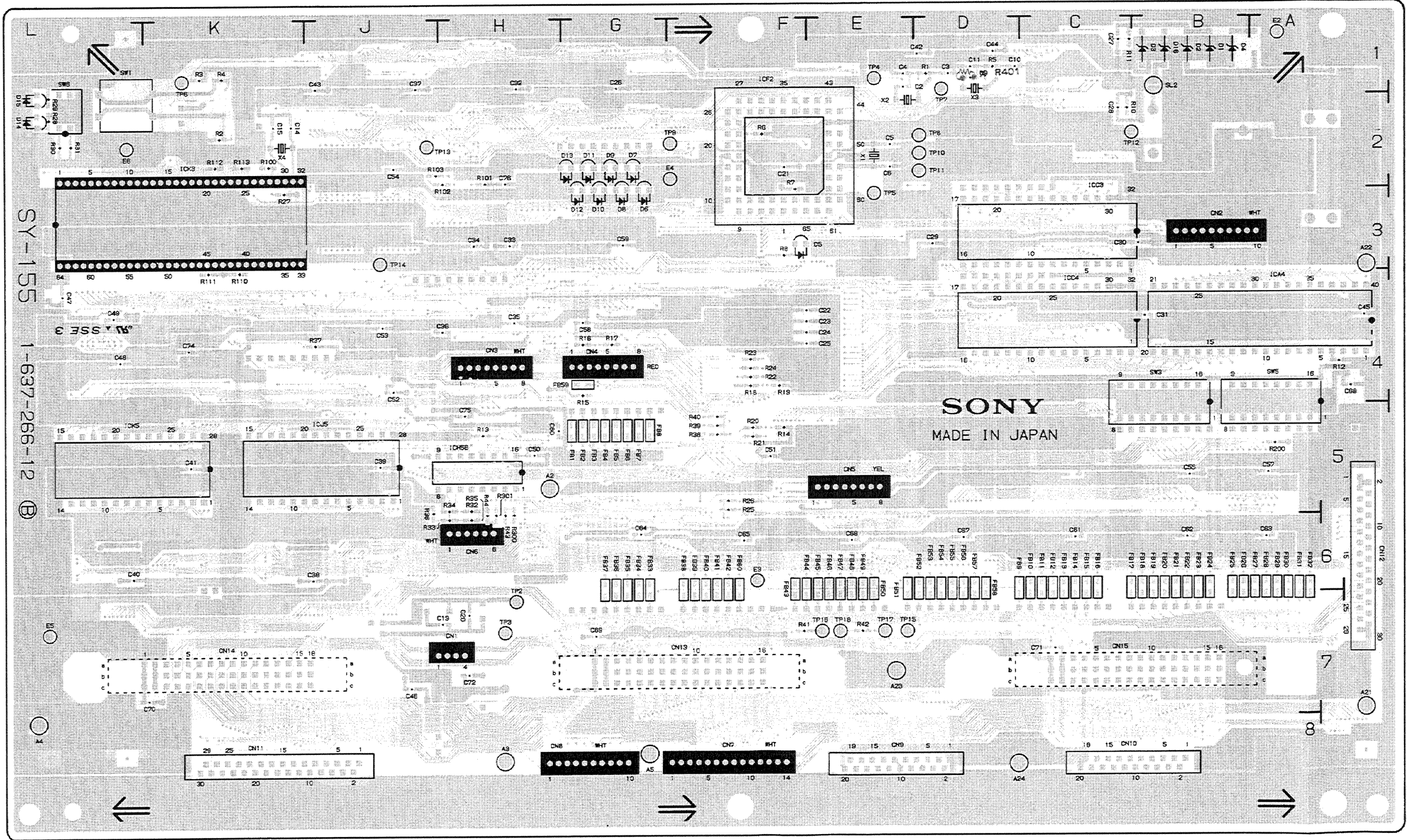
B-53-1(b)

D1	B-1	ICH1	H-1	X1	E-2
D2	B-1	ICH2	H-2	X2	E-2
D3	B-1	ICH3A	H-3	X3	D-1
D4	B-1	ICH3B	H-3	X4	K-2
D5	E-3	ICH4A	G-4		
D6	G-3	ICH4B	H-4		
D7	G-2	ICH5A	H-5		
D8	G-3	ICH5B	H-5		
D9	G-2	ICJ1A	J-1		
D10	G-3	ICJ1B	J-1		
D11	G-2	ICJ2	J-3		
D12	G-3	ICJ4A	J-4		
D13	G-2	ICJ4B	J-4		
D14	L-2	ICJ5	J-5		
D15	L-2	ICJ6	J-5		
D16	B-1	ICK2	K-1		
		ICK3	K-2		
E2	A-1	ICK4	K-4		
E3	F-6	ICK5	K-5		
E4	F-3	ICK6	L-5		
E5	L-7	ICL4A	L-4		
E6	L-2	ICL4B	L-4		
ICA4	A-4	SW1	L-1		
ICA5	A-5	SW3	B-4		
ICA6	A-5	SW5	A-4		
ICB5	B-5	SW6	L-1		
ICB6	B-6				
ICC1	C-1	TP2	H-6		
ICC2	C-2	TP3	H-7		
ICC3	B-3	TP4	E-1		
ICC4	C-4	TP5	E-3		
ICC6	C-6	TP6	K-1		
ICD1A	D-1	TP7	D-2		
ICD1B	D-1	TP8	E-2		
ICD3	D-3	TP9	F-2		
ICD6	D-6	TP10	E-2		
ICE6	E-5	TP11	D-2		
ICF2	F-1	TP12	C-2		
ICF4	F-3	TP13	H-2		
ICF5	F-5	TP14	J-3		
ICF6	F-5	TP15	E-7		
ICG1	G-1	TP16	E-7		
ICG3	G-3	TP17	E-7		
ICG4	G-4	TP18	E-7		
ICG5	G-5	TP19	H-7		
ICG6	G-6				

B-54-1(b)

SY-155B BOARD (PCM-7030)
(1-637-266-12)
Solder Side

Serial No. UC 20026 and higher
EK 50061 and higher



D1	B-1
D2	B-1
D3	B-1
D4	B-1
D5	E-3
D6	G-3
D7	G-2
D8	G-3
D9	G-2
D10	G-3
D11	G-2
D12	G-3
D13	G-2
D14	L-2
D15	L-2
D16	B-1
E2	A-1
E3	F-6
E4	F-3
E5	L-7
E6	L-2
ICA4	A-4
ICA5	A-5
ICA6	A-5
ICB5	B-5
ICB6	B-6
ICC1	C-1
ICC2	C-2
ICC3	B-3
ICC4	C-4
ICC6	C-6
ICD1A	D-1
ICD1B	D-1
ICD3	D-3
ICD6	D-6
ICE6	E-5
ICF2	F-1
ICF4	F-3
ICF5	F-5
ICF6	F-5
ICG1	G-1
ICG3	G-3
ICG4	G-4
ICG5	G-5
ICG6	G-6

Applied Serial No. UC 20026 and higher
EK 50061 and higher

Parts that have been changed. C5 → R401

1. *Abstract* The purpose of this study was to investigate the effect of a 12-week training program on the physical and psychological health of elderly people. The study was conducted in a community center in Tehran, Iran. The participants were 30 elderly people (15 men and 15 women) aged 65 and above. They were divided into two groups: a control group and an experimental group. The experimental group participated in a 12-week training program consisting of aerobic exercises, strength training, and flexibility exercises. The control group did not participate in any training program. The physical health of the participants was measured using a series of tests, including a 6-minute walk test, a 30-second chair stand test, and a handgrip strength test. The psychological health of the participants was measured using a series of questionnaires, including the Geriatric Depression Scale (GDS), the Geriatric Anxiety Inventory (GAI), and the Geriatric Life Satisfaction Scale (GLSS). The results of the study showed that the experimental group had significantly higher scores on all physical and psychological health measures compared to the control group at the end of the 12-week training program. The findings of this study suggest that a 12-week training program can improve the physical and psychological health of elderly people.

SY-155B



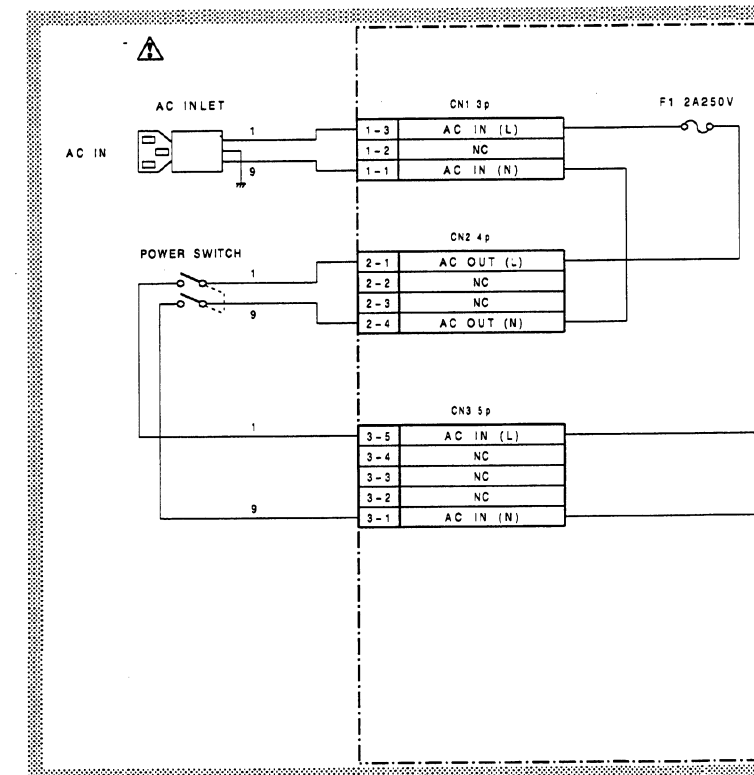
D1	B-1	ICH1	H-1	X1	E-2
D2	B-1	ICH2	H-2	X2	E-2
D3	B-1	ICH3A	H-3	X3	D-1
D4	B-1	ICH3B	H-3	X4	K-2
D5	E-3	ICH4A	G-4		
D6	G-3	ICH4B	H-4		
D7	G-2	ICH5A	H-5		
D8	G-3	ICH5B	H-5		
D9	G-2	ICJ1A	J-1		
D10	G-3	ICJ1B	J-1		
D11	G-2	ICJ2	J-3		
D12	G-3	ICJ4A	J-4		
D13	G-2	ICJ4B	J-4		
D14	L-2	ICJ5	J-5		
D15	L-2	ICJ6	J-5		
D16	B-1	ICK2	K-1		
		ICK3	K-2		
E2	A-1	ICK4	K-4		
E3	F-6	ICK5	K-5		
E4	F-3	ICK6	L-5		
E5	L-7	ICL4A	L-4		
E6	L-2	ICL4B	L-4		
ICA4	A-4	SW1	L-1		
ICA5	A-5	SW3	B-4		
ICA6	A-5	SW5	A-4		
ICB5	B-5	SW6	L-1		
ICB6	B-6				
ICC1	C-1	TP2	H-6		
ICC2	C-2	TP3	H-7		
ICC3	B-3	TP4	E-1		
ICC4	C-4	TP5	E-3		
ICC6	C-6	TP6	K-1		
ICD1A	D-1	TP7	D-2		
ICD1B	D-1	TP8	E-2		
ICD3	D-3	TP9	F-2		
ICD6	D-6	TP10	E-2		
ICE6	E-5	TP11	D-2		
ICF2	F-1	TP12	C-2		
ICF4	F-3	TP13	H-2		
ICF5	F-5	TP14	J-3		
ICF6	F-5	TP15	E-7		
ICG1	G-1	TP16	E-7		
ICG3	G-3	TP17	E-7		
ICG4	G-4	TP18	E-7		
ICG5	G-5	TP19	H-7		
ICG6	G-6				

Applied Serial No. UC 20026 and higher EK 50061 and higher	
Parts that have been changed.	C9 → R401

SECTION C SCHEMATIC DIAGRAMS

AC-104

AC-104 BOARD (PCM-7030)
AC, Fuse



A

B

C-1

C

D

E

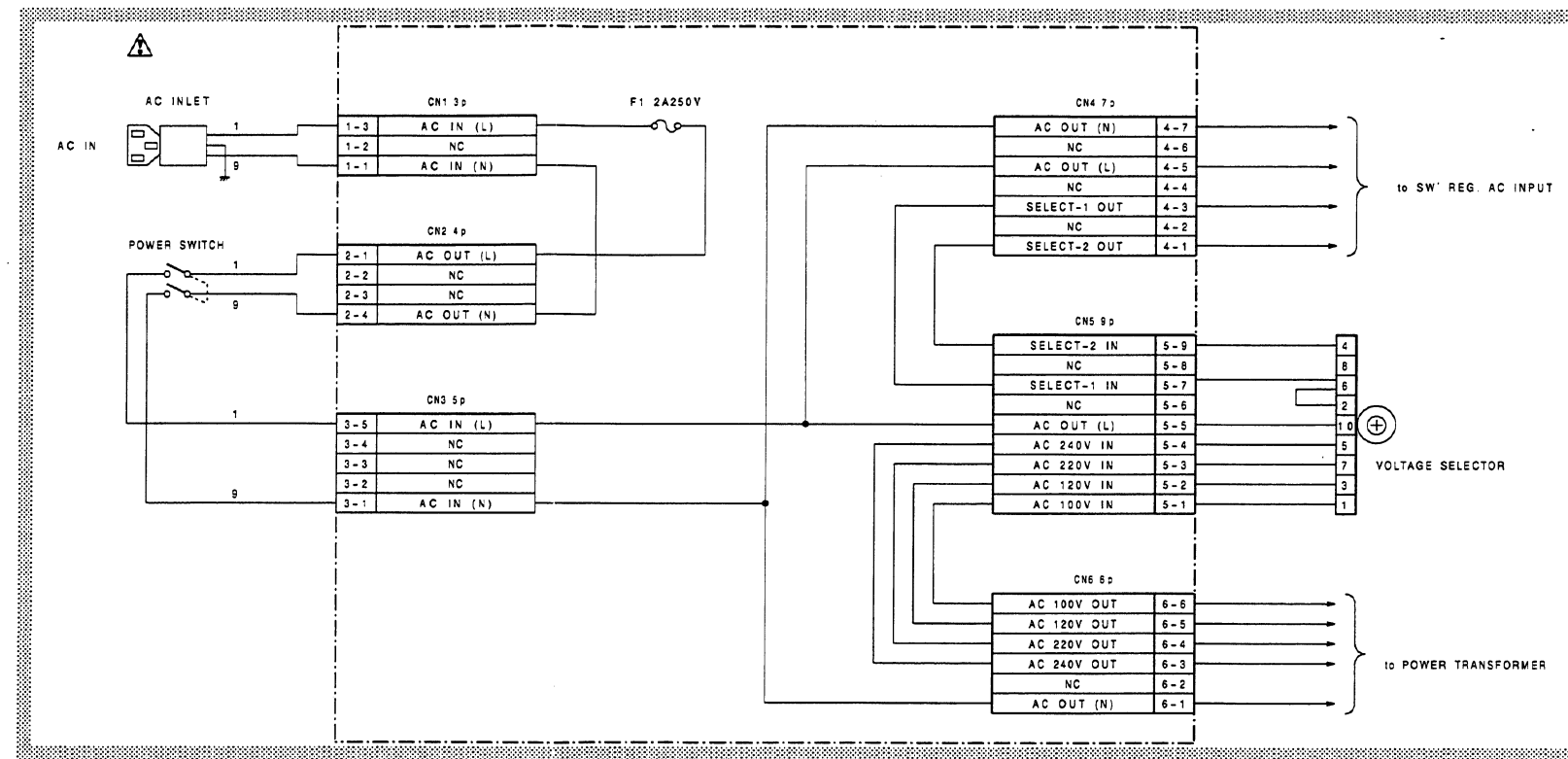
F

C-2

G

H

AC-104 BOARD (PCM-7030)
AC, Fuse



NOTE:
The shaded and ⚠-marked components are critical to safety.
Replace only with same components as specified.

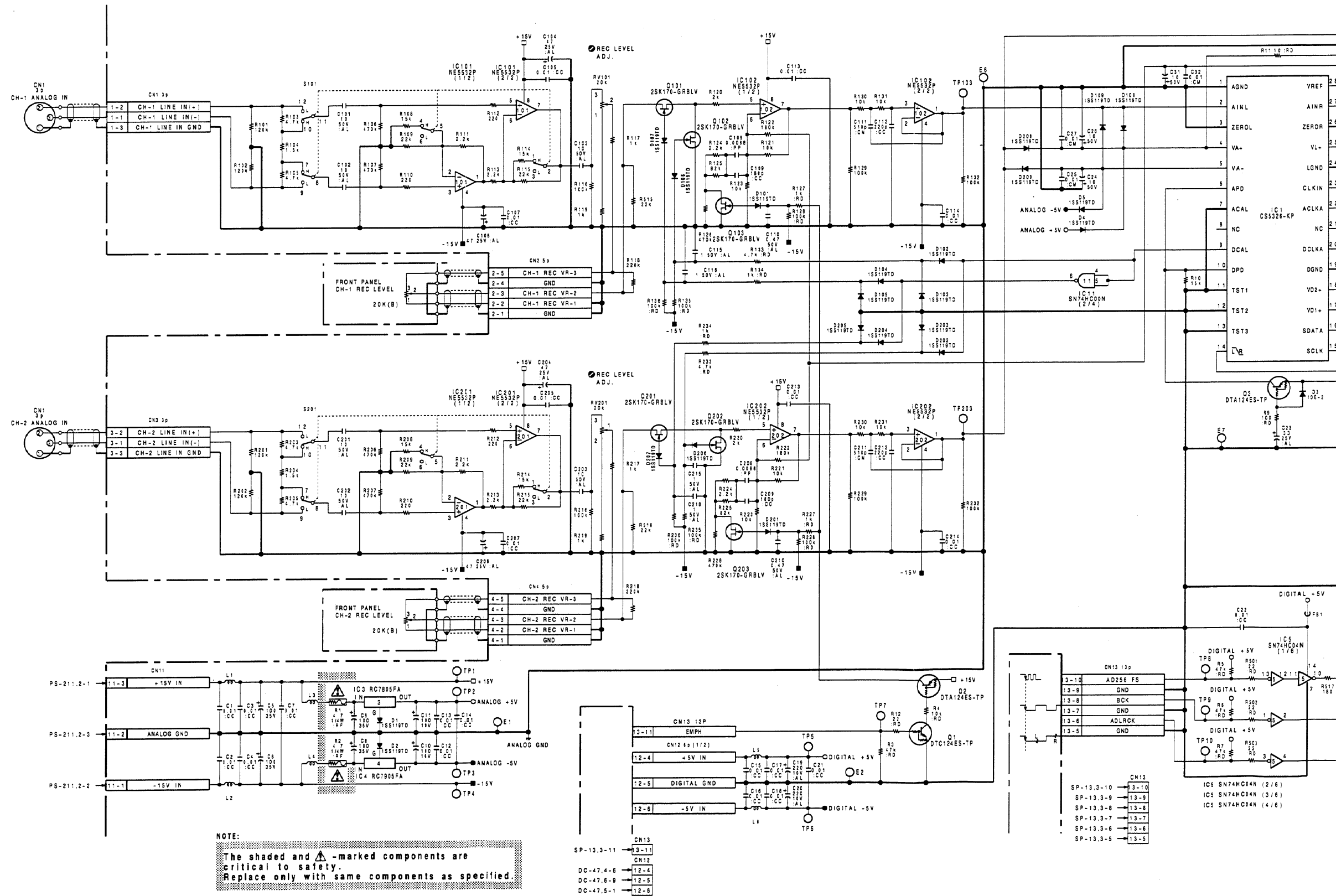
AC-104 BOARD
BOARD NO.1-637-275-11 & HIGHER
PCM-7030

ADA-18(1/2)

ADA-18(1/2)

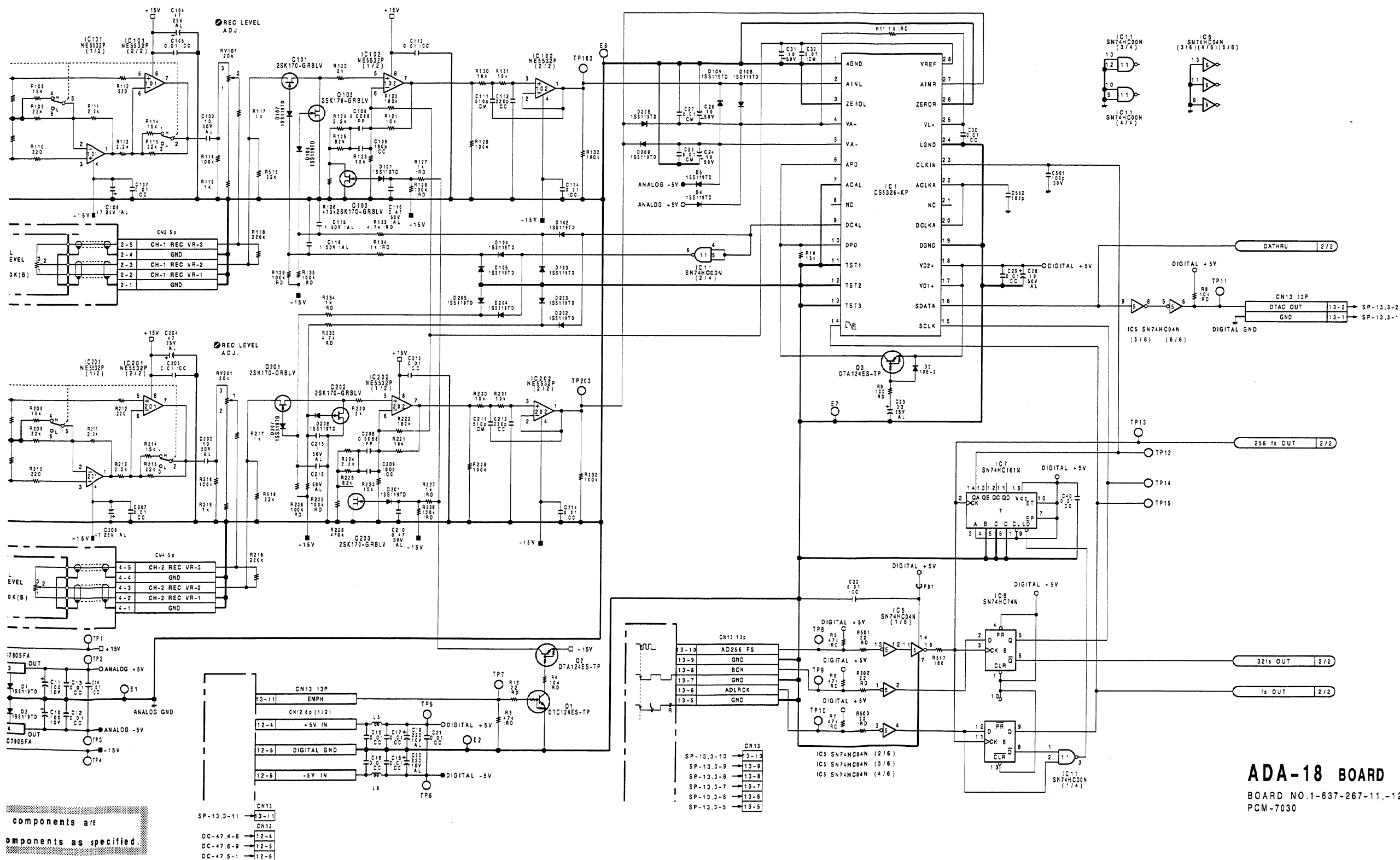
ADA-18(1/2) BOARD (PCM-7030)
REC Audio A/D Converter

Serial No. UC 20001 to 20115
EK 50001 to 50580



C-7(a)

C-8(a)



ADA-18 BOARD (1 / 2)

BOARD NO.1-637-267-11,-12,-13
PCM-7030

C - 8 (a)

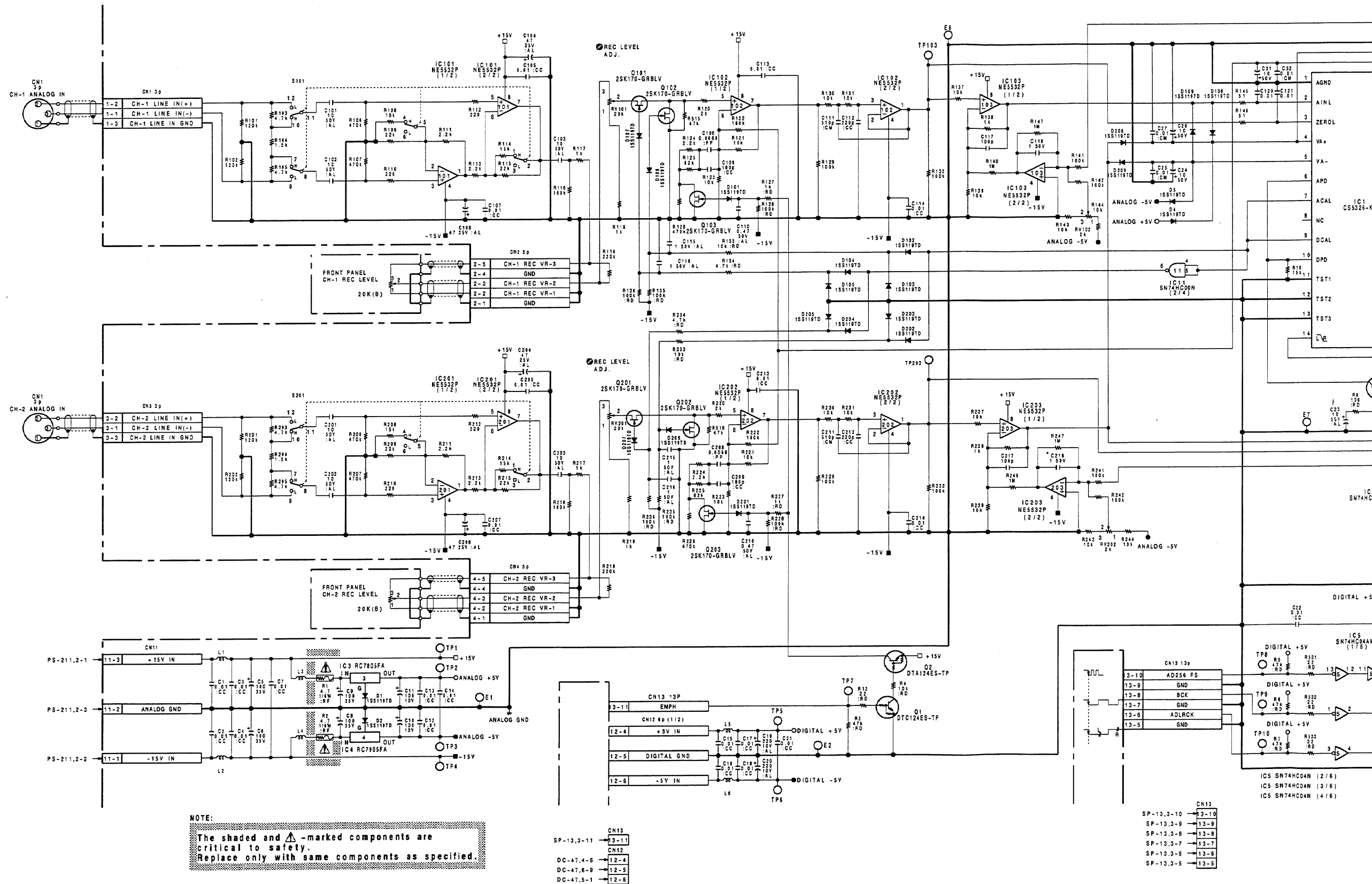
C - 9 (a)

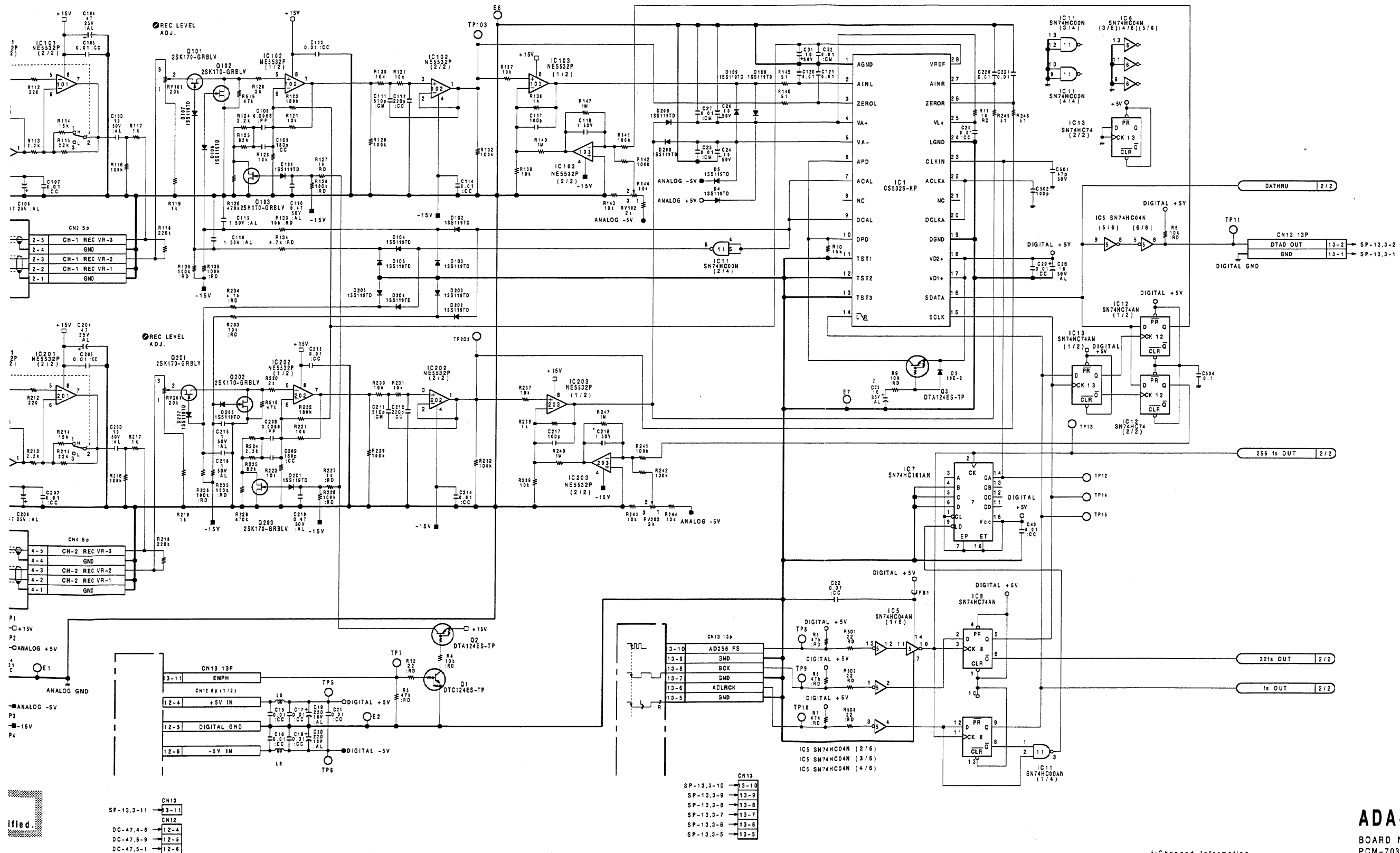
ADA-18(1/2)

ADA-18(1/2)

ADA-18(1/2) BOARD (PCM-7030)
REC Audio, A/D Converter

Serial No. UC 20116 and higher
EK 50581 and higher





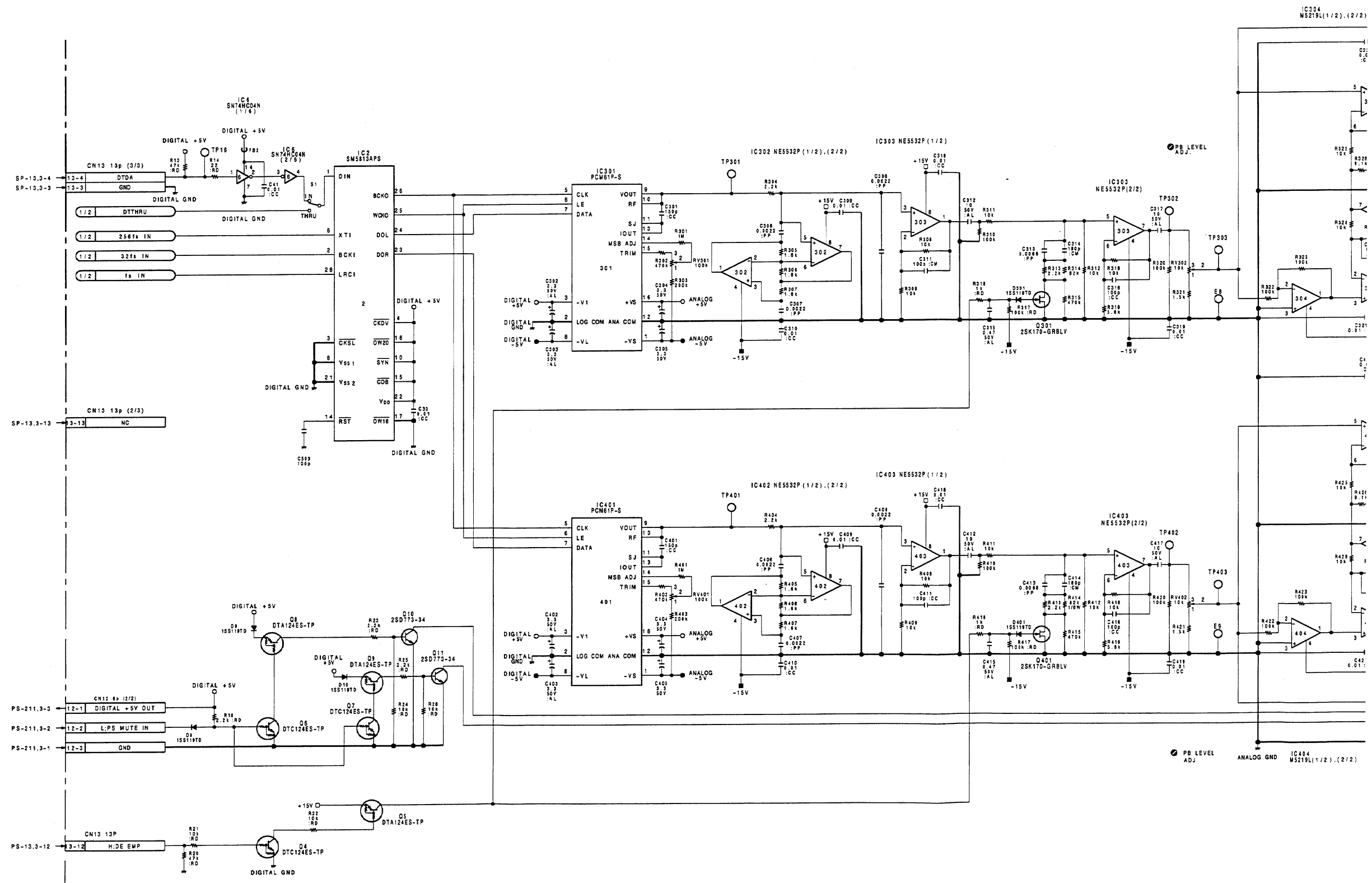
C - 8 (b)

C - 9 (b)

ADA-18 BOARD (1 / 2)

BOARD NO.1-637-267-14 & HIGHER
PCM-7030

A: Changed Information	
Applied Serial No.	Parts that have been changed.
UC:25471 and higher	C23 33uF 25V
EK:55371 and higher	→ 10uF 35V

ADA-18(2/2) BOARD (PCM-7030)
PB Audio,D/A Converter

C-13

C-14

A

B

C

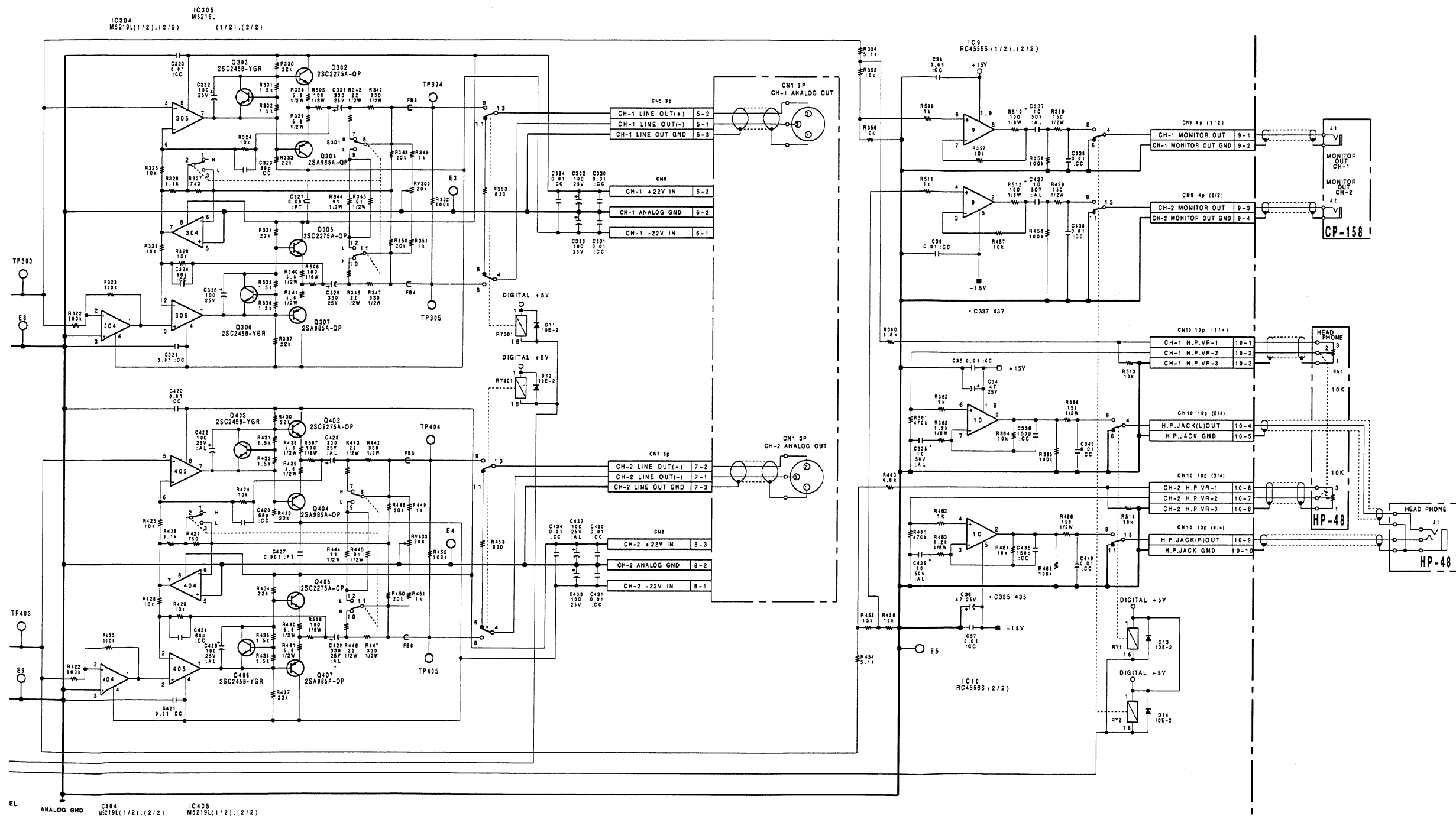
D

E

F

G

H



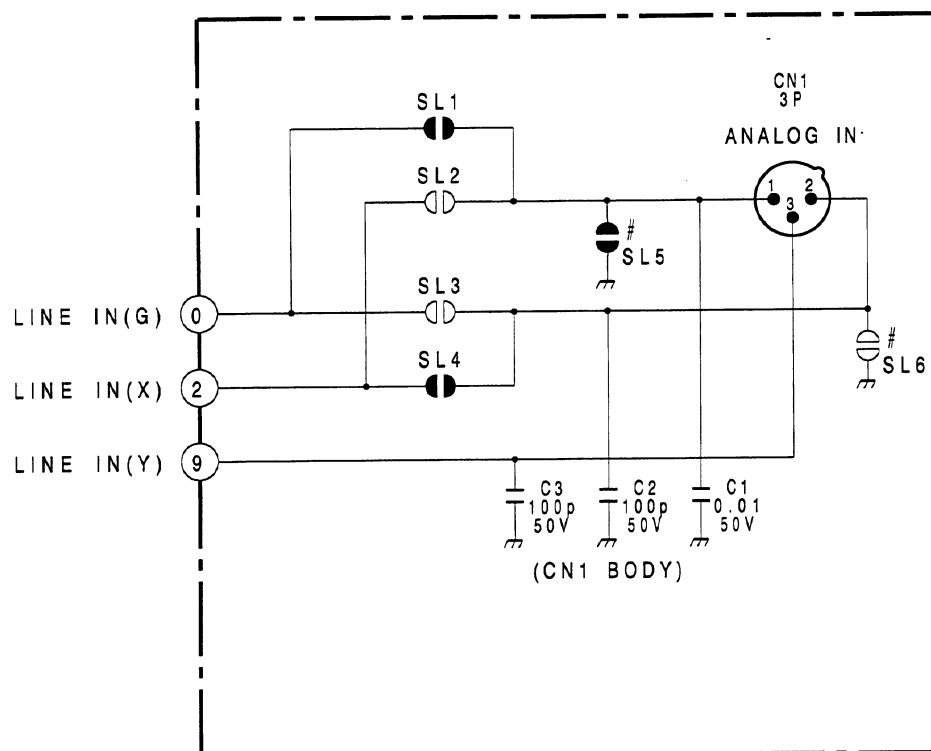
ADA-18 BOARD (2/2)

BOARD NO.1-637-267-11 & HIGHER
PCM-7030

C-15

C-16

CP-157A BOARD (PCM-7030)
Connector(ANALOG IN)



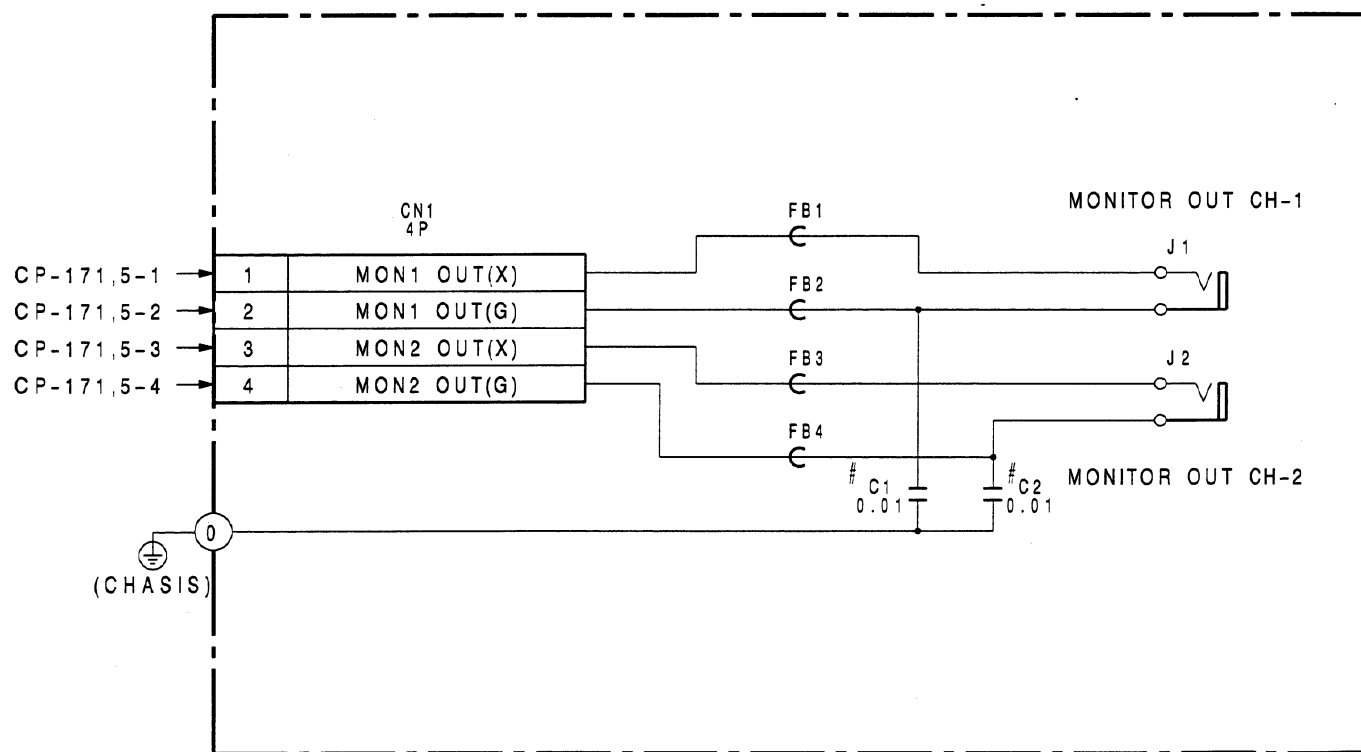
Changed Information

Applied Serial No.	Parts that have been added.
UC:20046 and higher	SL5
EK:50201 and higher	SL6

CP-157A BOARD

BOARD NO.1-637-277-11 & HIGHER
PCM-7030

CP-158 BOARD (PCM-7030)
Connector (MONITOR)



:Changed Information

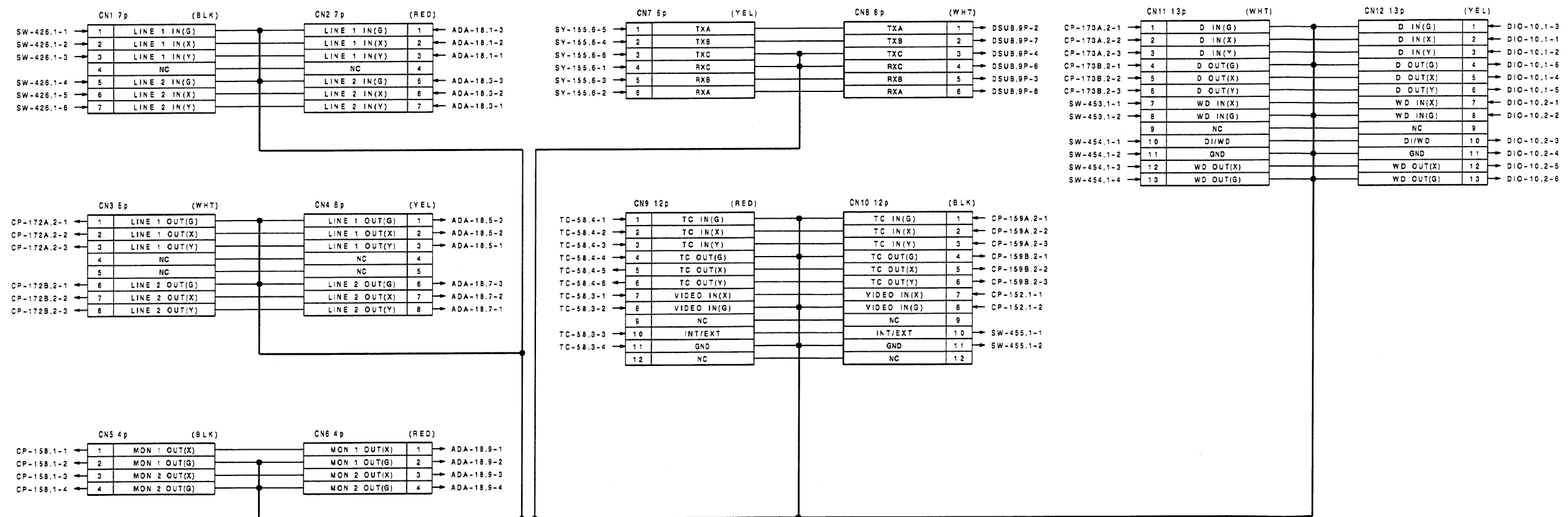
Applied Serial No.	Parts that have been deleted.
UC:20046 and higher	C1
EK:50201 and higher	C2

CP-158 BOARD

BOARD NO.1-637-282-11 & HIGHER
PCM-7030

CP-171

CP-171

CP-171 BOARD (PCM-7030)
Connector

CP-171 BOARD

BOARD NO.1-637-276-11 & HIGHER
PCM-7030

C-25

C-26

A

B

C

D

E

F

G

H

1



3

4

5

A

C

D

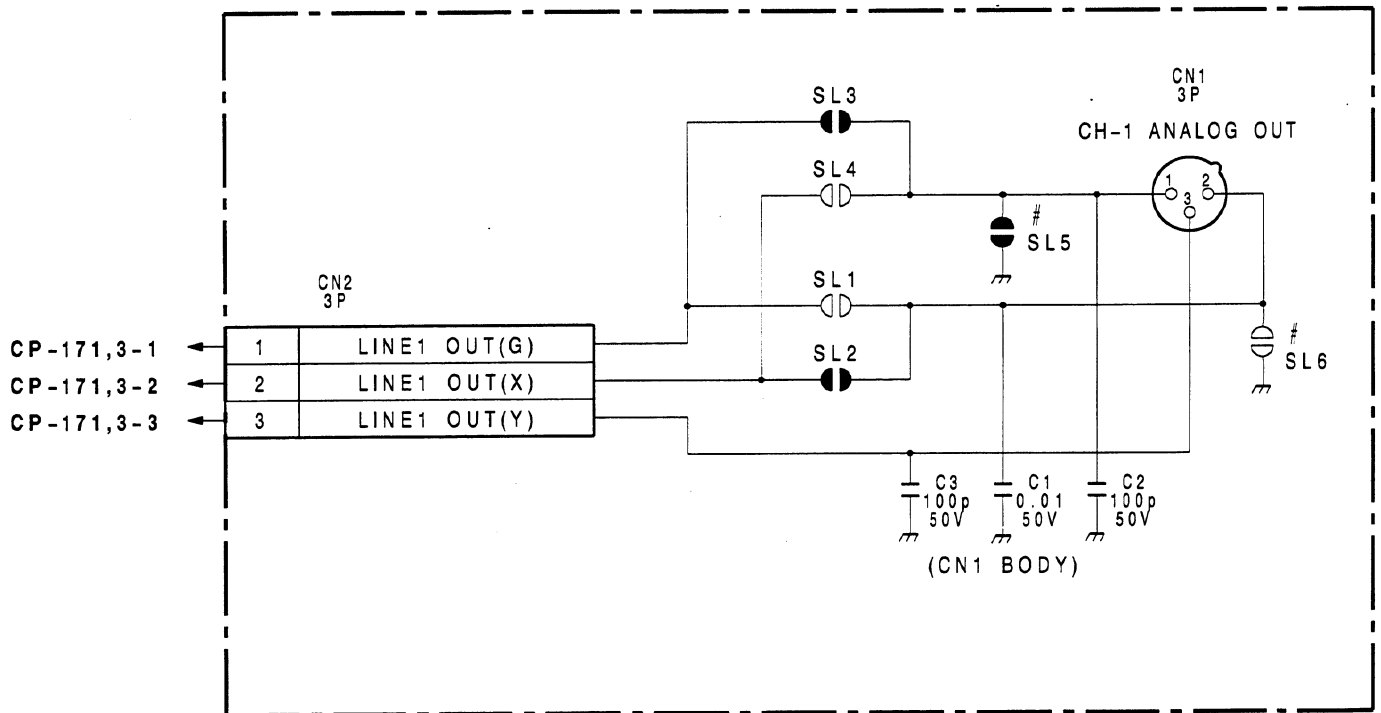
F

E

6

U

CP-172A BOARD (PCM-7030)
Connector(ANALOG OUT)



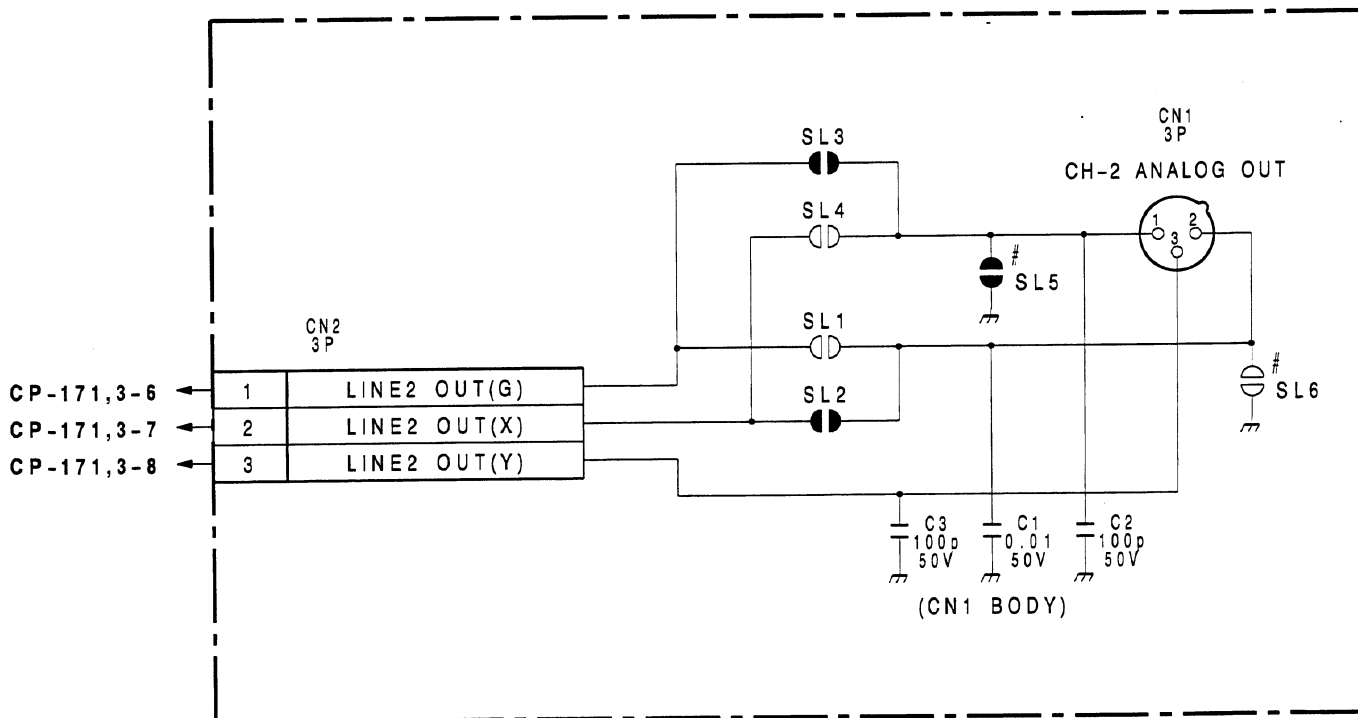
Changed Information

Applied Serial No.	Parts that have been added.
LC:20046 and higher	SL5
EK:50201 and higher	SL6

CP-172A BOARD

BOARD NO.1-637-280-11 & HIGHER
PCM-7030

CP-172B BOARD (PCM-7030)
Connector(ANALOG OUT)



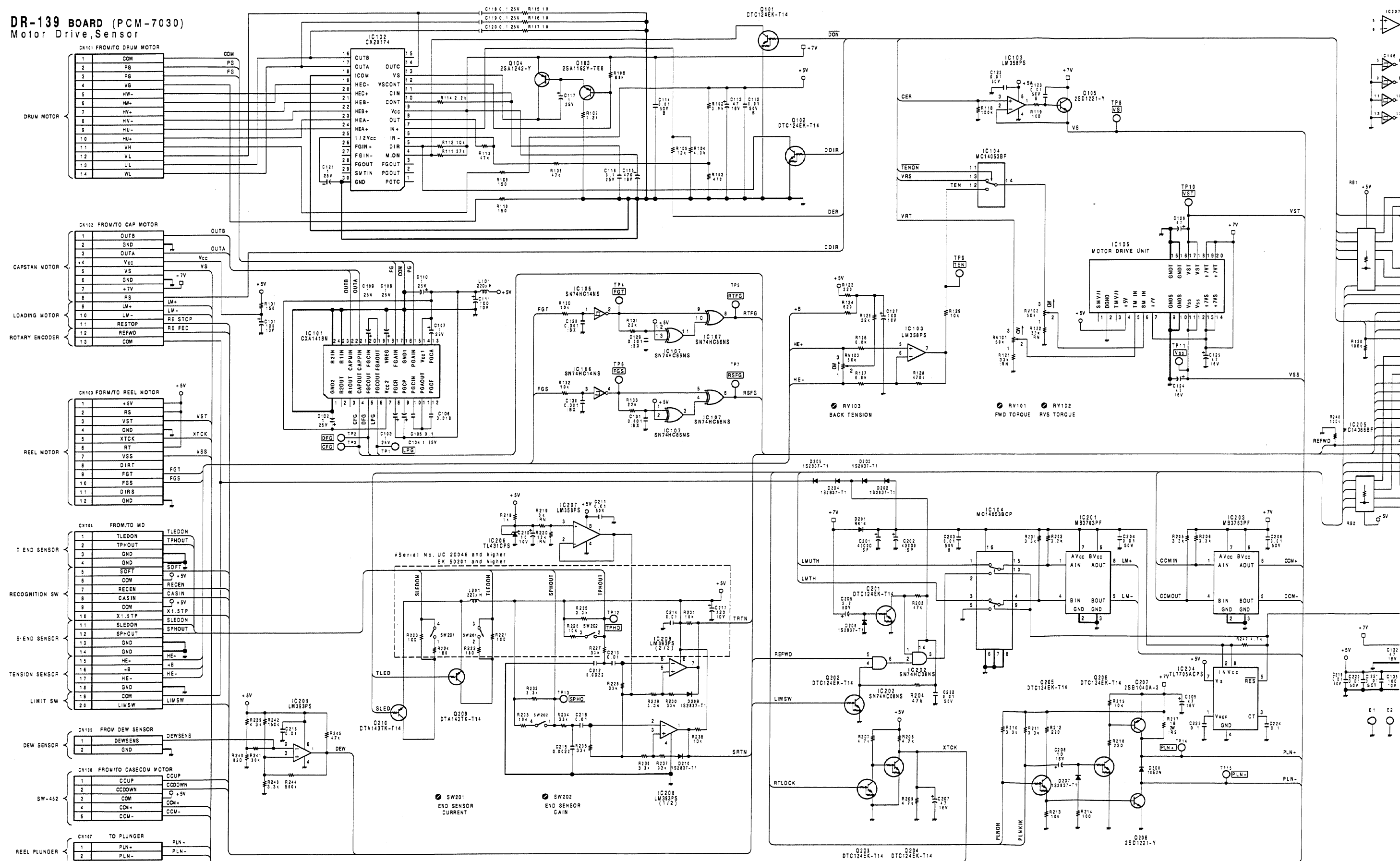
Changed Information

Applied Serial No.	Parts that have been added.
UC:20046 and higher	SL5
EK:50201 and higher	SL6

CP-172B BOARD

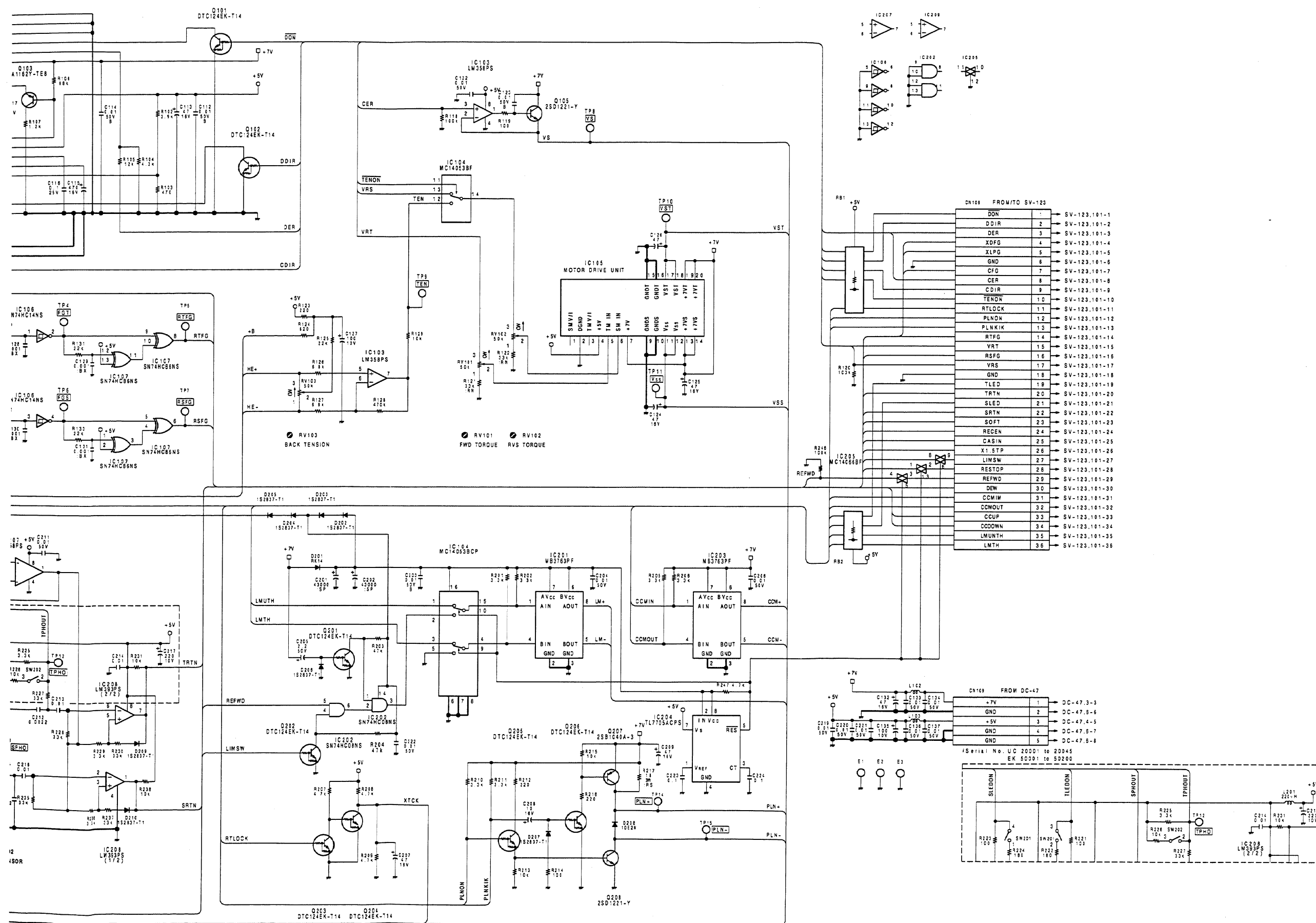
BOARD NO.1-637-281-11 & HIGHER
PCM-7030

DR-139 BOARD (PCM-7030)
Motor Drive, Sensor



C-37

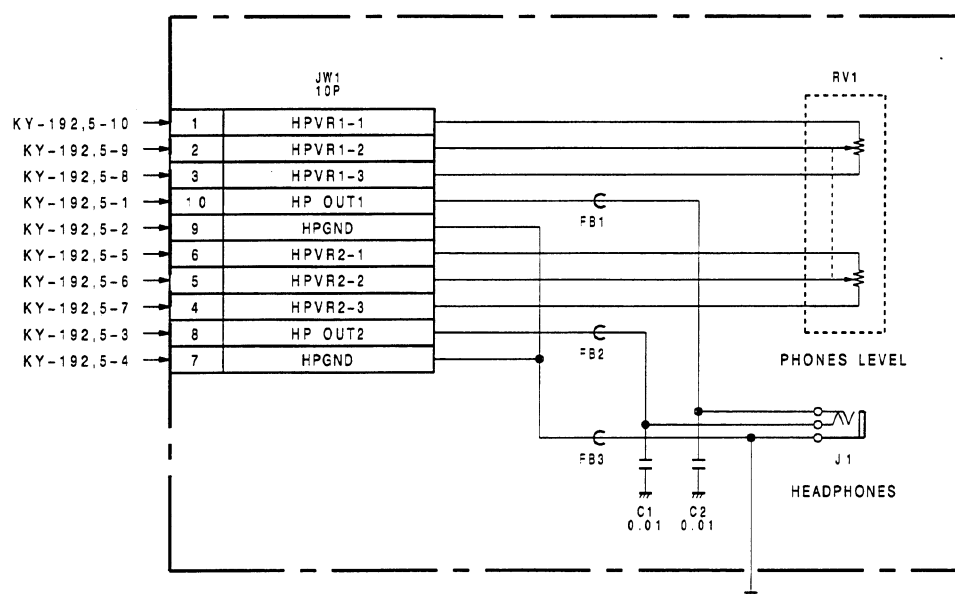
C - 38



DR-139 BOARD

BOARD NO.1-637-285-11 & HIGHER
PCM-7030

HP-48 BOARD (PCM-7030) Headphones

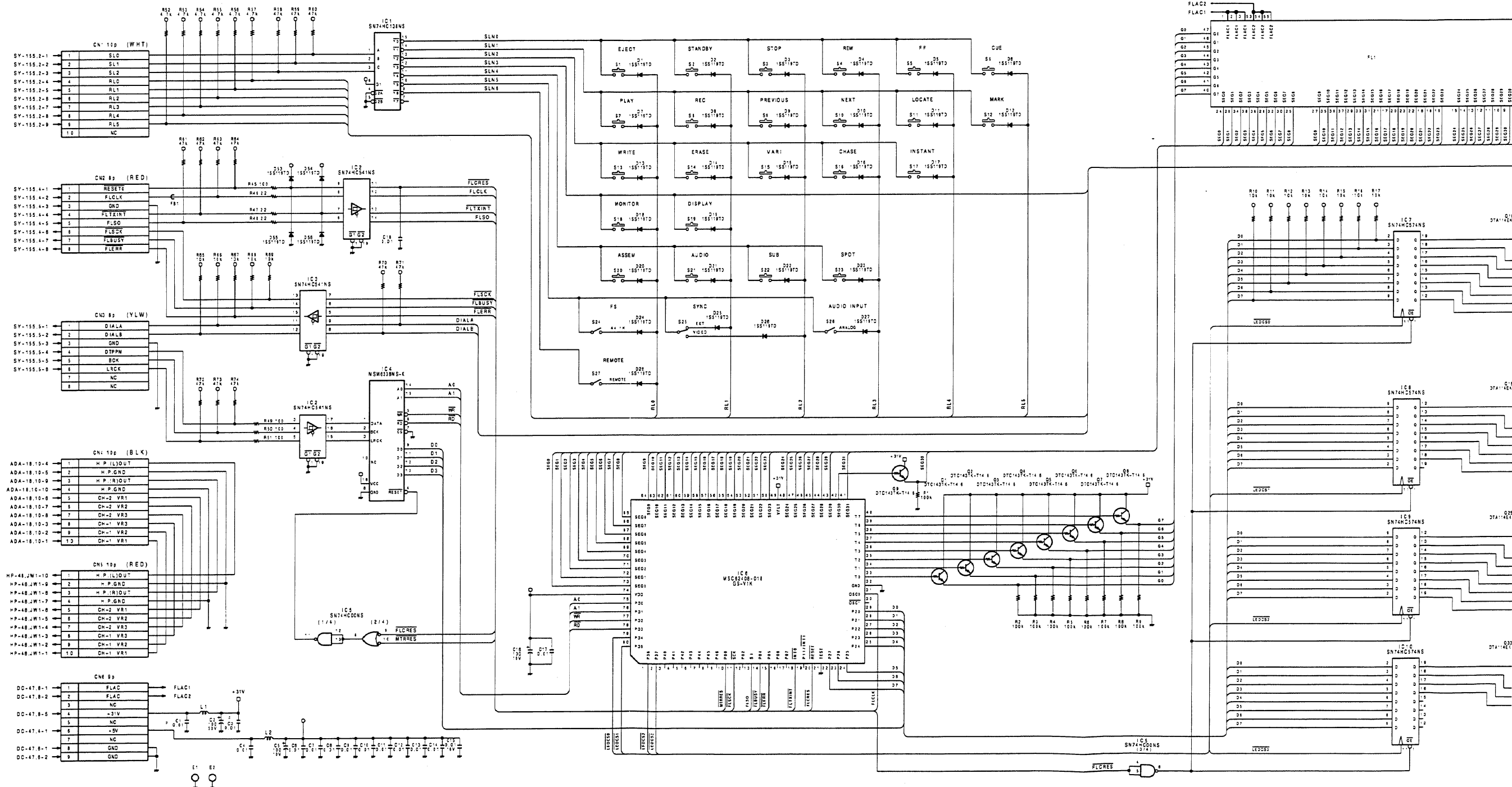


HP-48 BOARD

BOARD NO.1-637-283-12 & HIGHER
PCM-7030

KY-192

KY-192

KY-192 BOARD (PCM-7030)
Key, Display

C-45

C-46

A

B

C

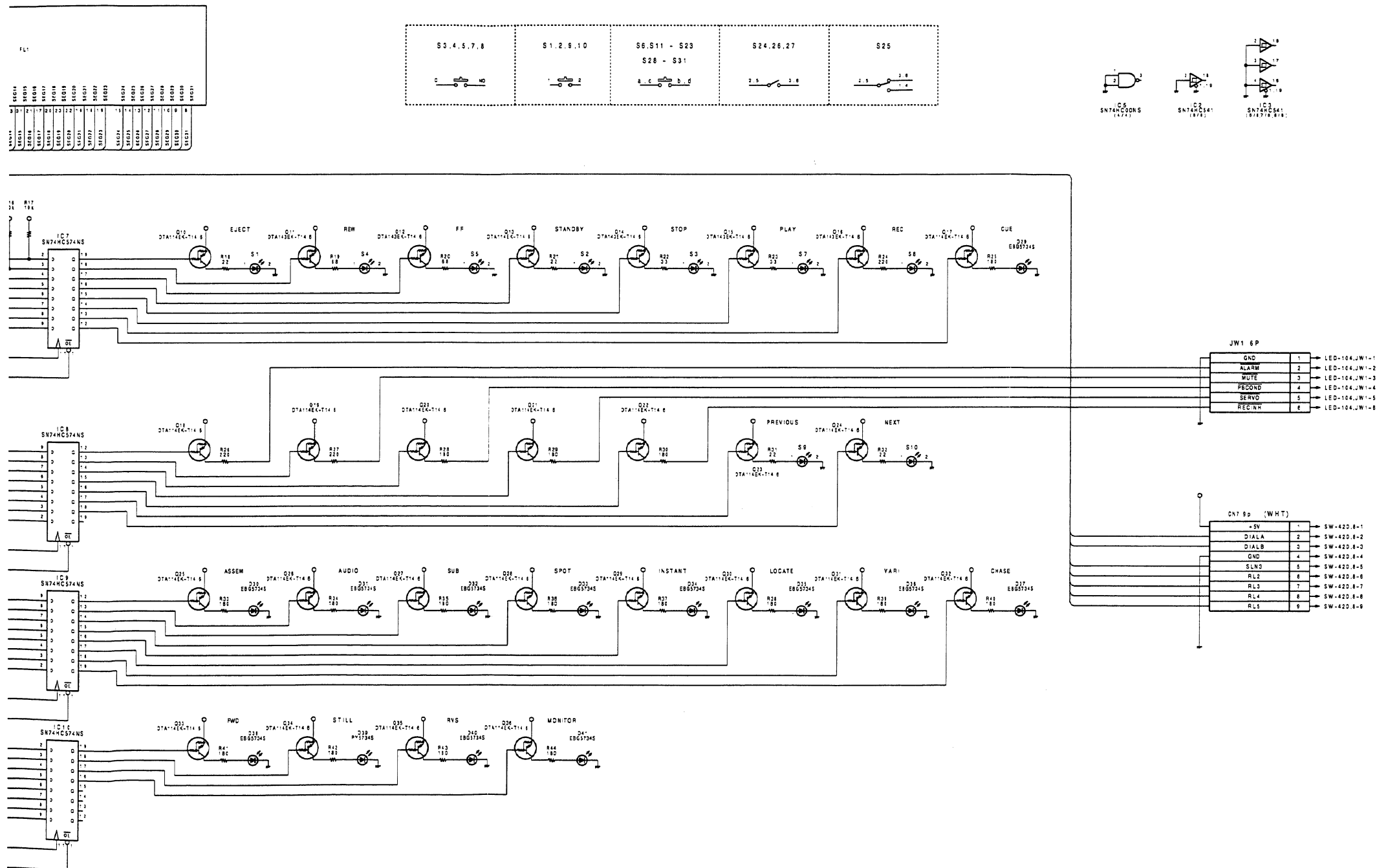
D

E

F

G

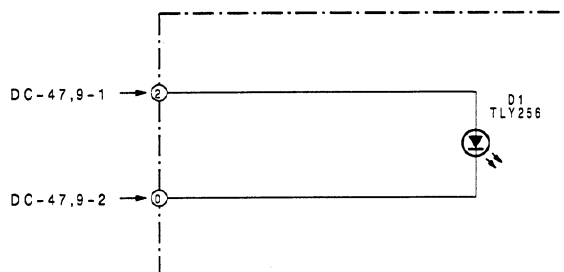
H



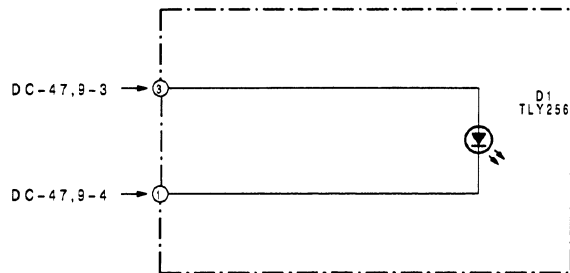
KY-192 BOARD

BOARD NO.1-637-268-11 & HIGHER
PCM-7030

*Changed Information	
Applied Serial No.	Parts that have been deleted.
UC:25471 and higher EK:55401 and higher	C1.3

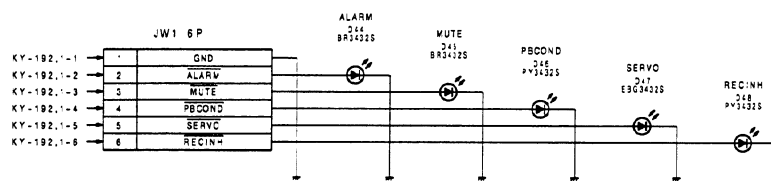
LE-90A BOARD (PCM-7030)
LED**LE-90A BOARD**BOARD NO.1-637-285-12 & HIGHER
PCM-7030

LE-90B BOARD (PCM-7030)
LED



LE-90B BOARD

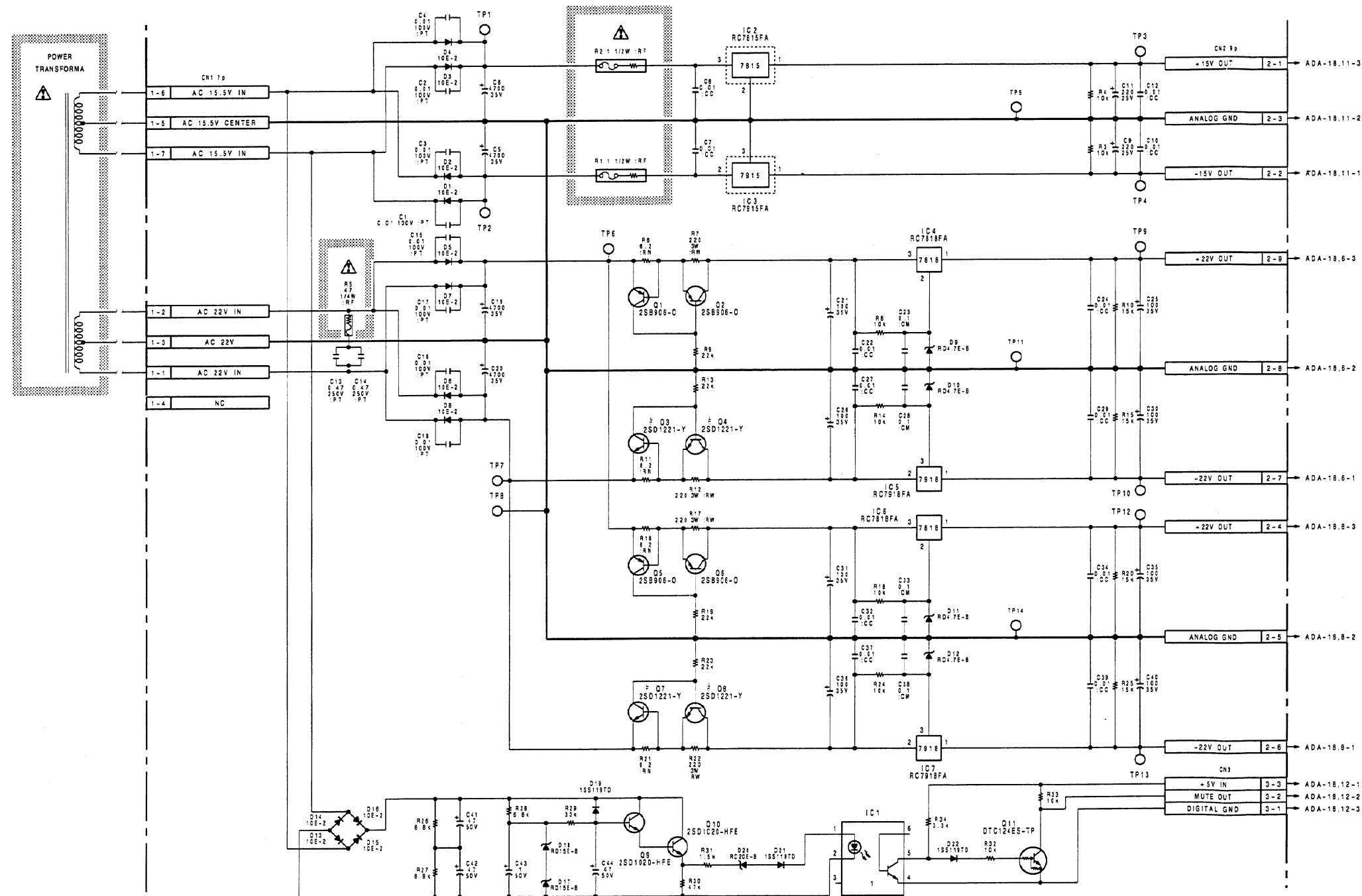
BOARD NO.1-637-286-12 & HIGHER
PCM-7030

LED-104 BOARD (PCM-7030)
LED(STATUS)**LED-104 BOARD**BOARD NO.1-637-269-11 & HIGHER
PCM-7030

PS-211

PS-211

PS-211 BOARD (PCM-7030) Power Supply



NOTE:

The shaded and ⚠-marked components are critical to safety. Replace only with same components as specified.

Changed Information

Applied Serial No.	Parts that have been changed.
UC:25501 and higher EK:55621 and higher	Q3, 4, 7, 8 2SC1221-O ↓ 2SC1221-Y

PS-211 BOARD

BOARD NO.1-637-273-11 & HIGHER
PCM-7030

C-59

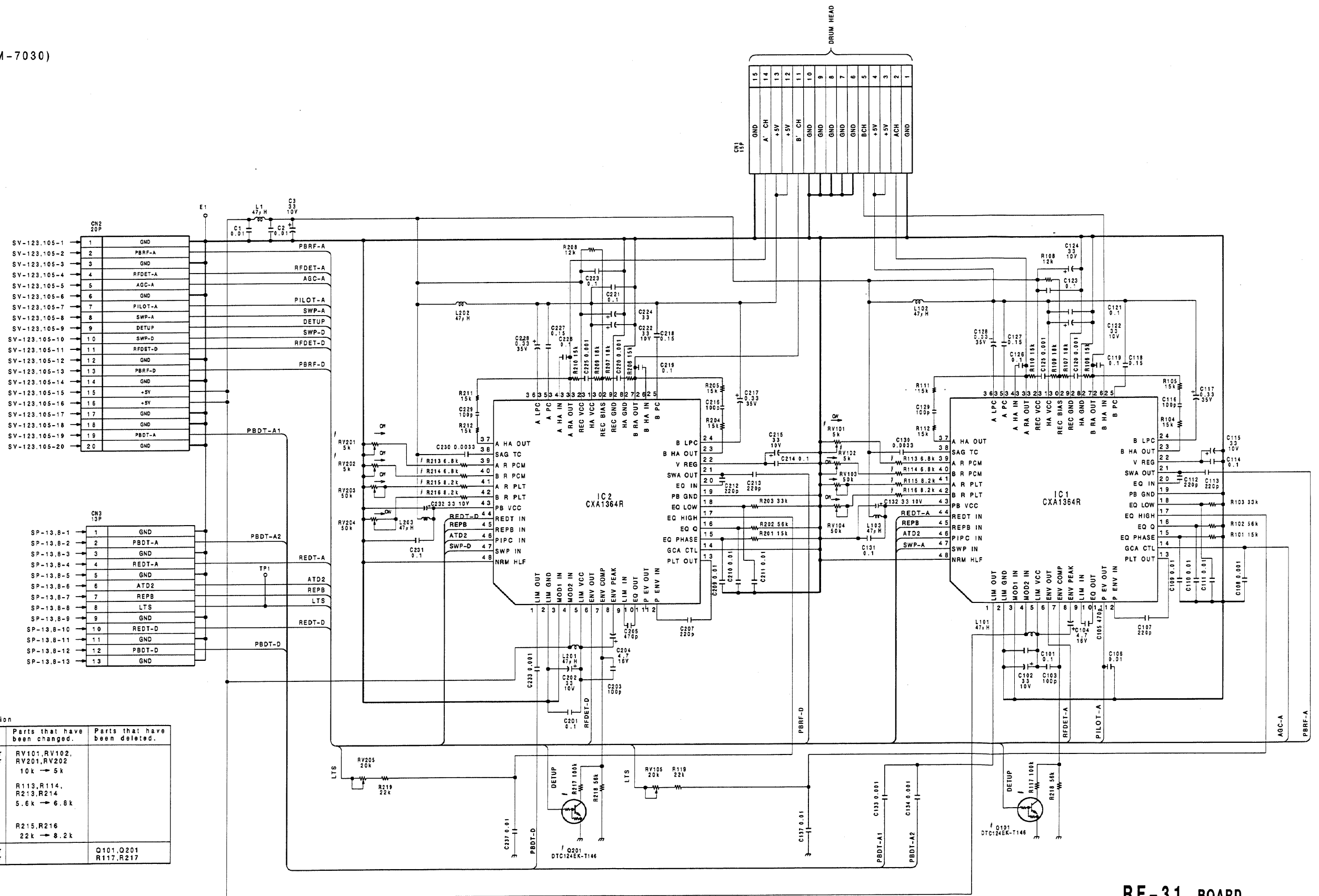
C-60

RF-31

RF-31

RF-31 BOARD (PCM-7030)

RF Amplifier



RF-31 BOARD

BOARD NO.1-637-271-11 & HIGHER
PCM-7030

C-63

C-64

A

B

C

D

E

F

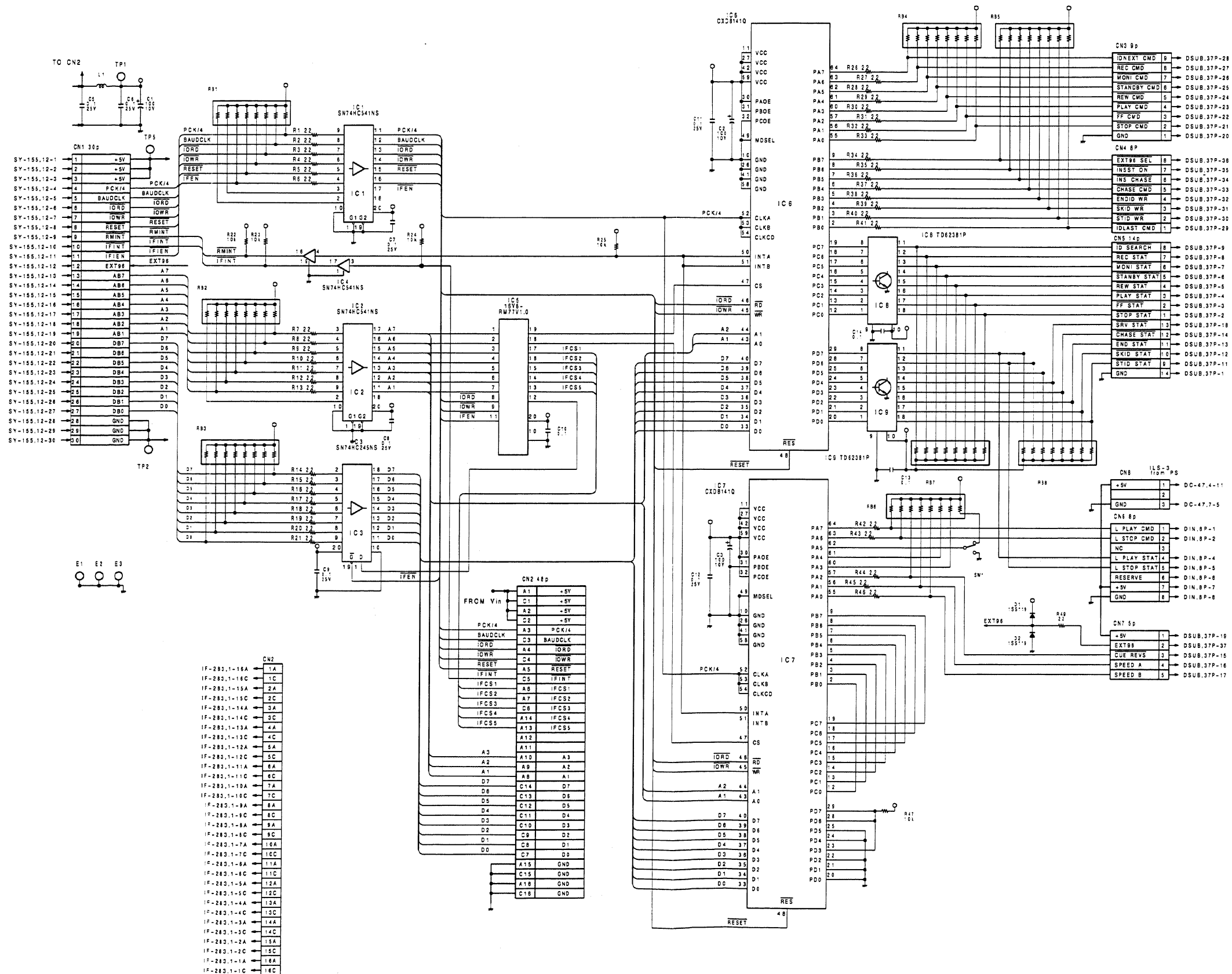
G

H

RM-77

RM-77

RM-77 BOARD (PCM-7030) Parallel Remote



C-67

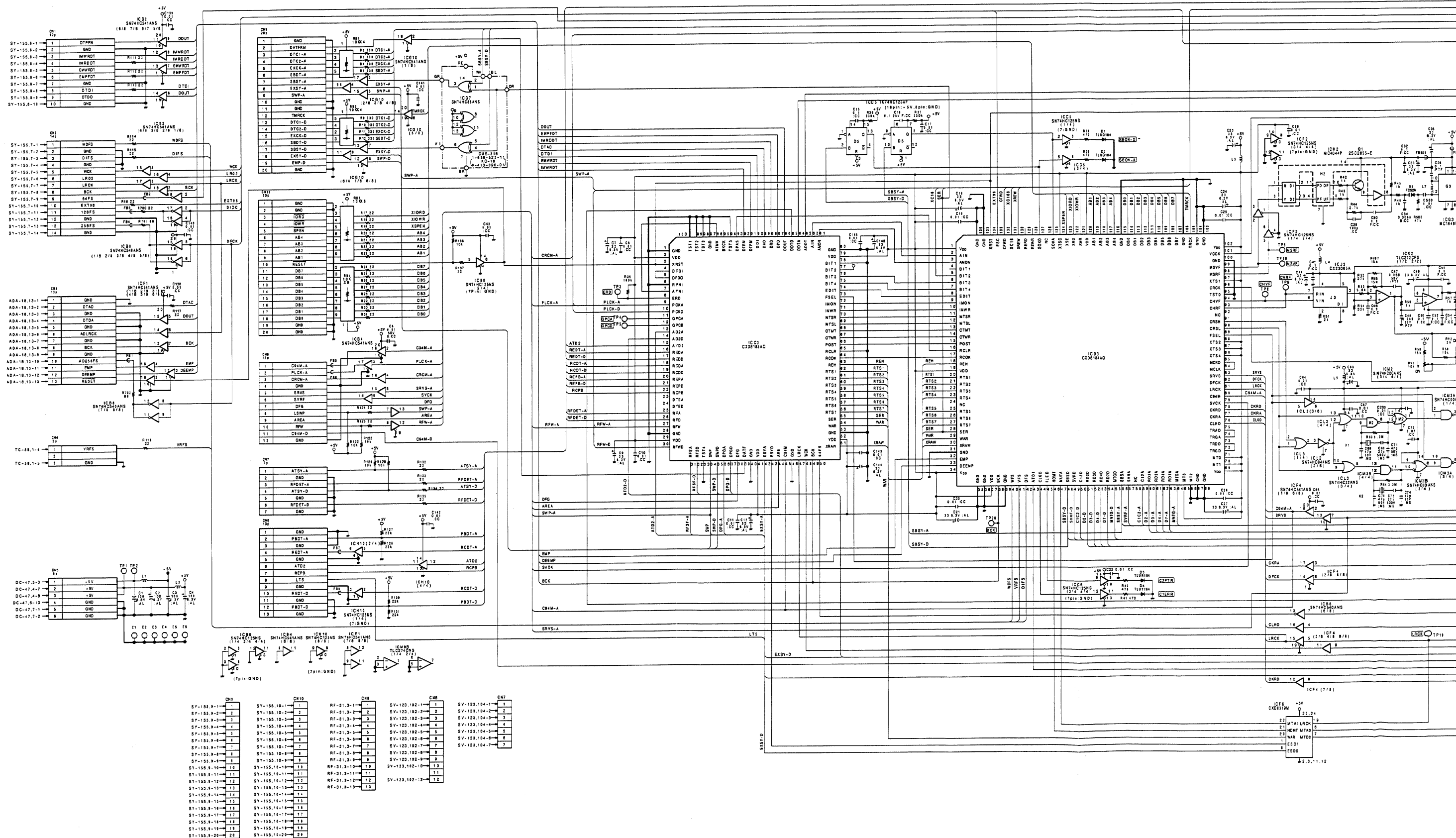
C-68

RM-77 BOARD

 BOARD NO.1-637-272-11 & HIGHER
PCM-7030

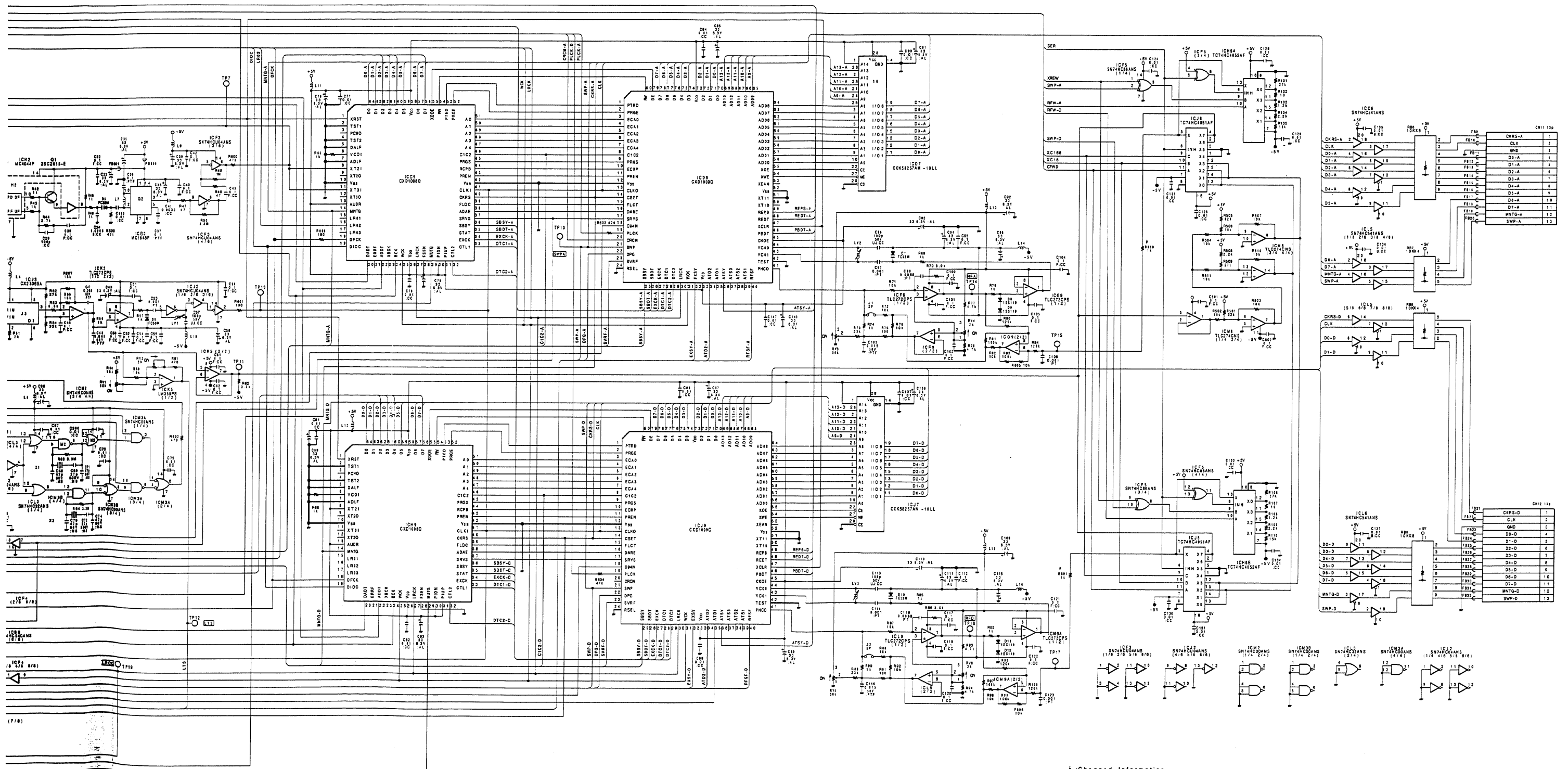
SP-13 BOARD (PCM-7030)
Signal Processor

Serial No.	UC 20001 to 20045
	EK 50001 to 50200



C - 7 1 (a)

C-72(a)



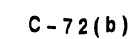
§ :Changed Information

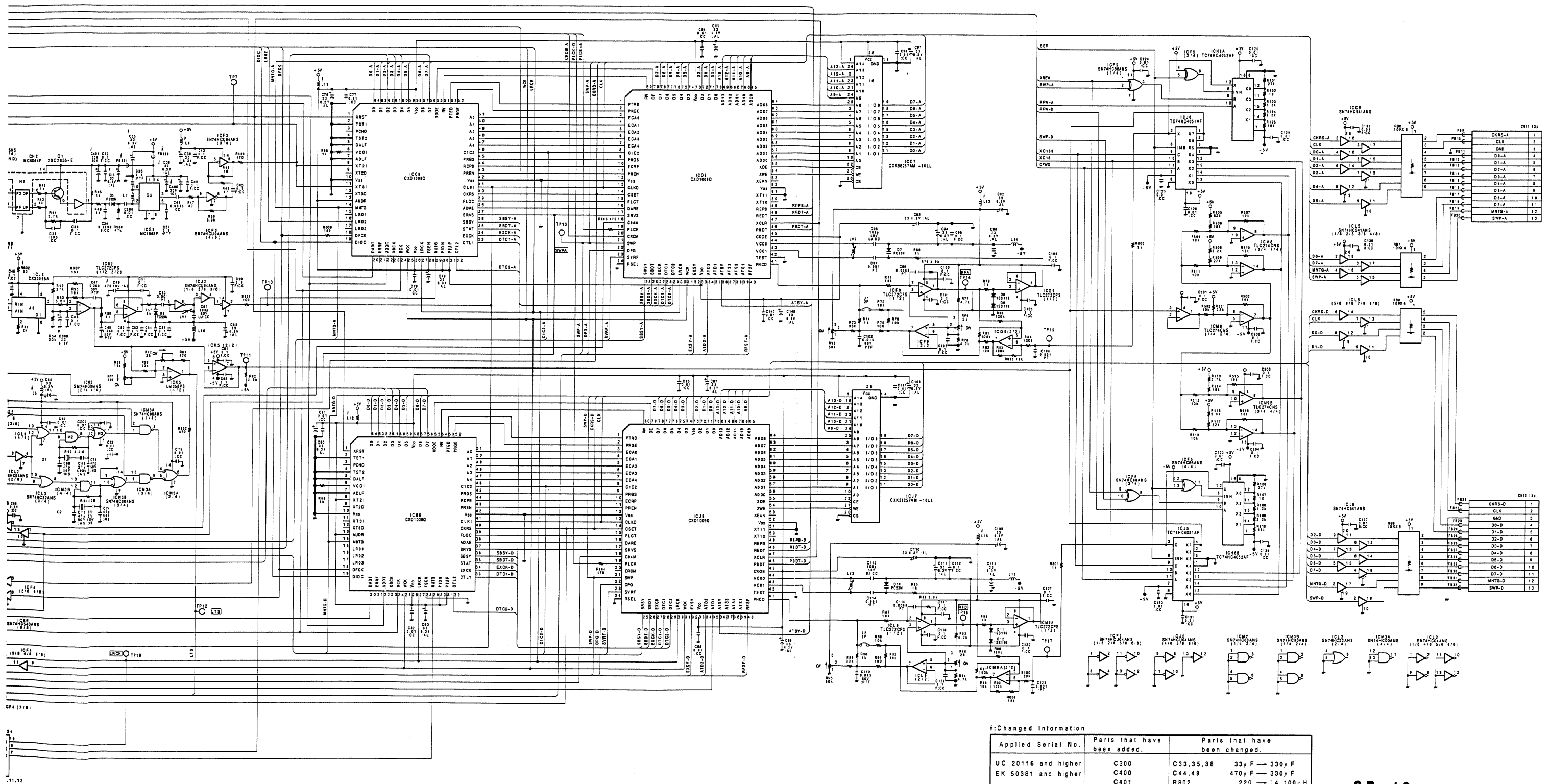
Applied Serial No.	Parts that have been added.
UC 20026 and higher	R800
EK 50051 and higher	R801

SP-13 BOARD

BOARD NO.1-637-265-11
PCM-7030

Serial No; UC 20046 to 20115 EK 50201 to 50580





Changed Information

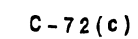
Applied Serial No.	Parts that have been added.	Parts that have been changed.
UC 20116 and higher	C300	C33, 35, 38 33 μ F $\rightarrow$ 330 μ F
EK 50381 and higher	C400	C44, 49 470 μ F $\rightarrow$ 330 μ F
	C401	R802 220 $\rightarrow$ L4 100 μ H
		L3, 5, 9, 11 45 μ H $\rightarrow$ 100 μ H
		L12, 13, 15
		FB600 L6 470 μ H
		FB601 L8 470 μ H
		R702 680 $\rightarrow$ 220 Ω

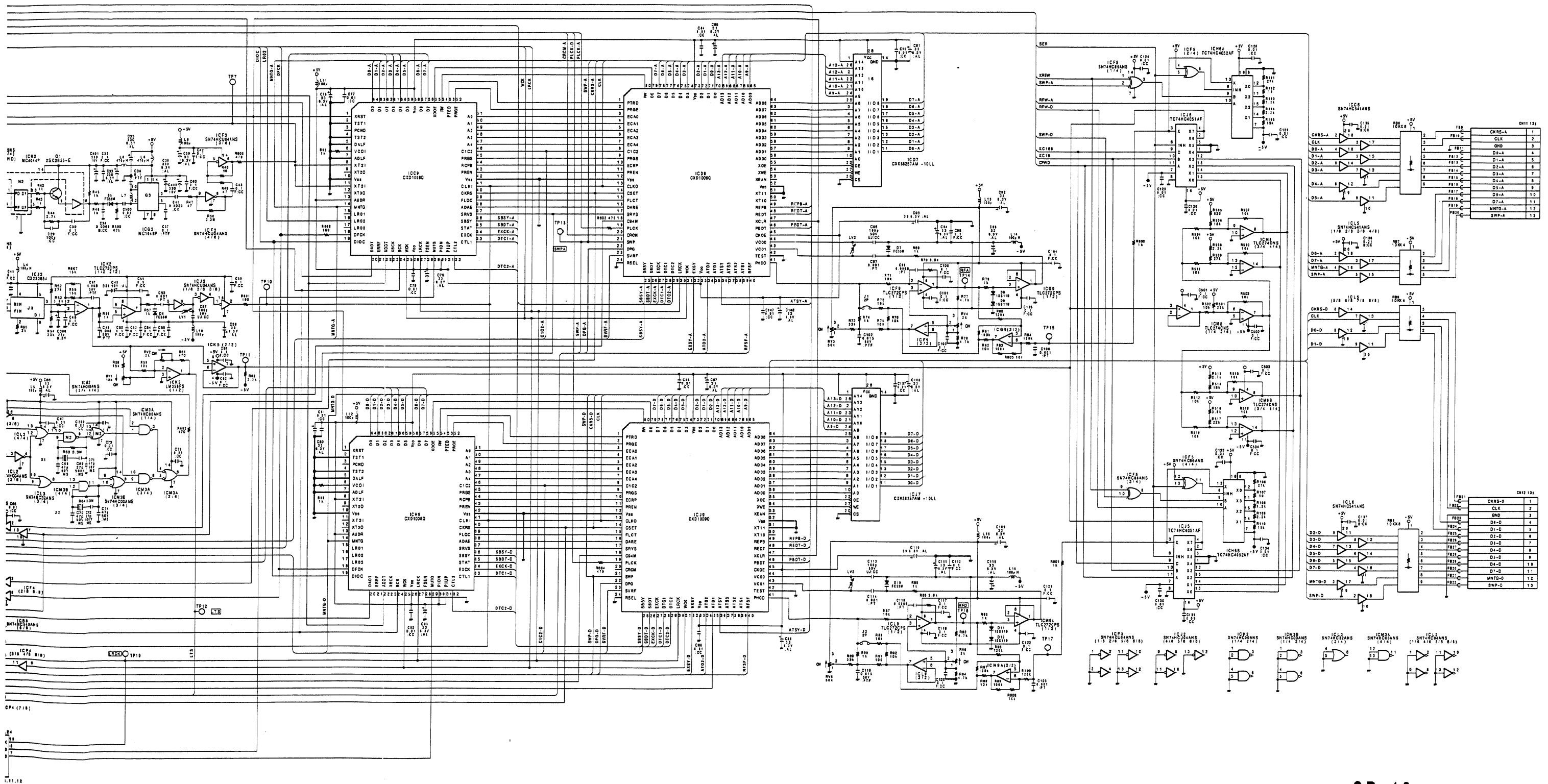
SP-13 BOARD
BOARD NO.1-637-265-12
PCM-7030

C-73(b)

C-74(b)

Serial No.	UC 20116 to 25020
	EK 50581 to 55040





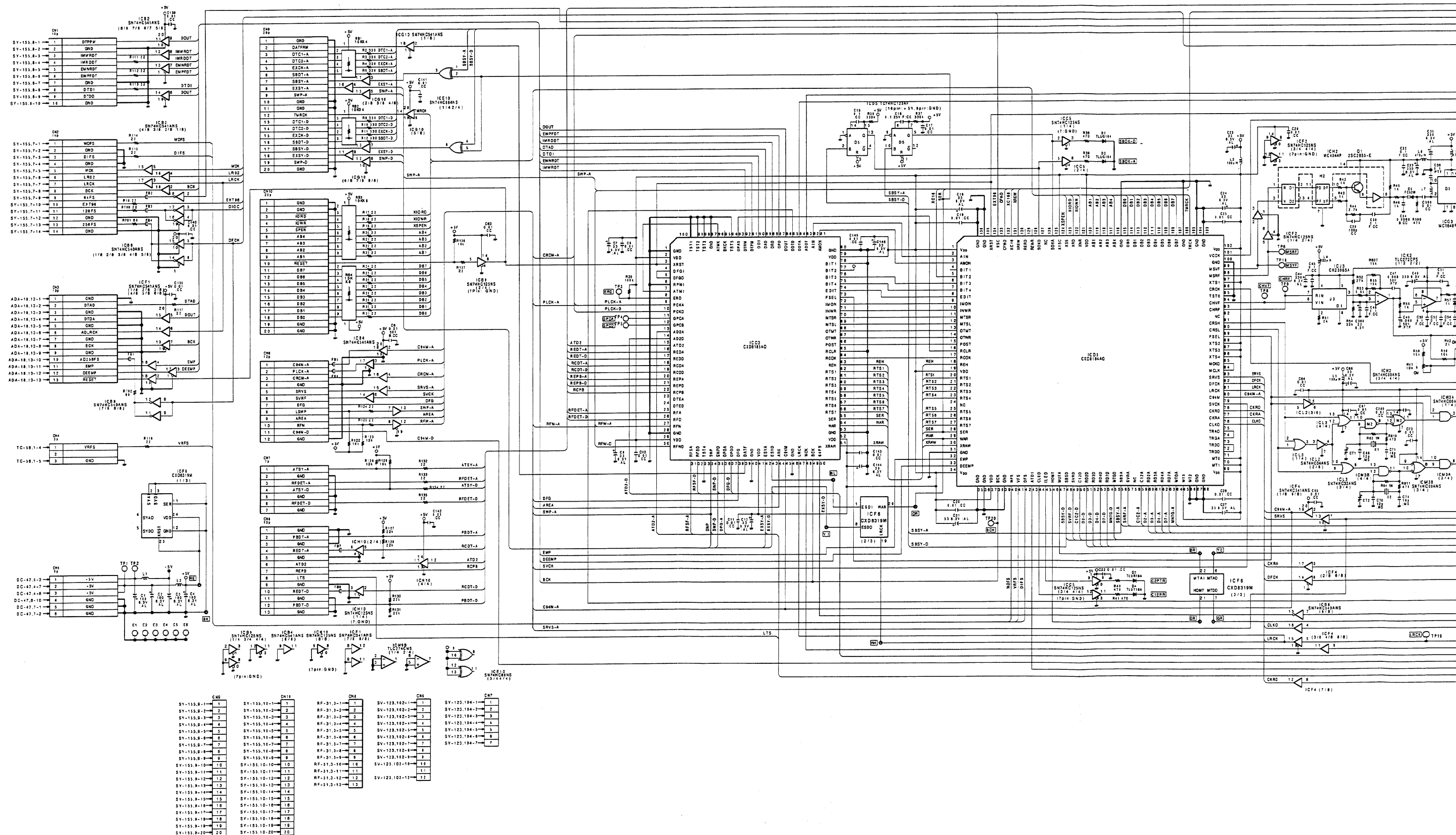
SP-13 BOARD
BOARD NO.1-637-265-13
PCM-7030

C-73(c)

C-74(c)

SP-13 BOARD (PCM-7030)
Signal Processor

Serial No. UC 25021 to 25180



C-71(d)

C-72(d)

A

B

C

D

E

F

G

H

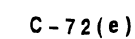


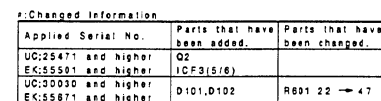
5.

BOARD NO.1-637-265-14
PCM-7030

C - 7 4 (d)

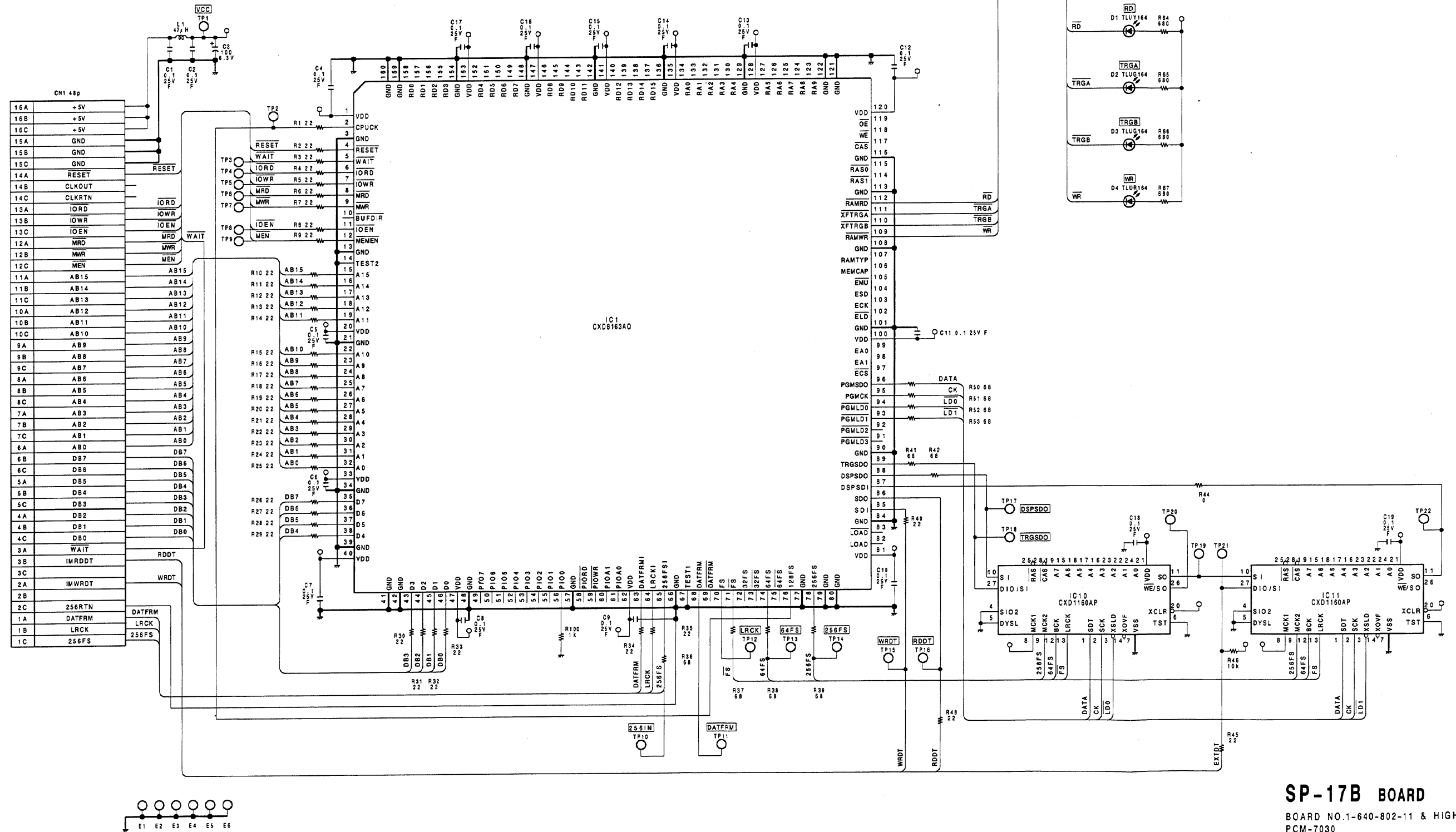
Serial No.	UC 25181 and higher
	EK 55041 and higher





SP-17B

SP-17B

SP-17B BOARD (PCM-7030)
Signal Processor

C-79

C-80

A

B

C

D

E

F

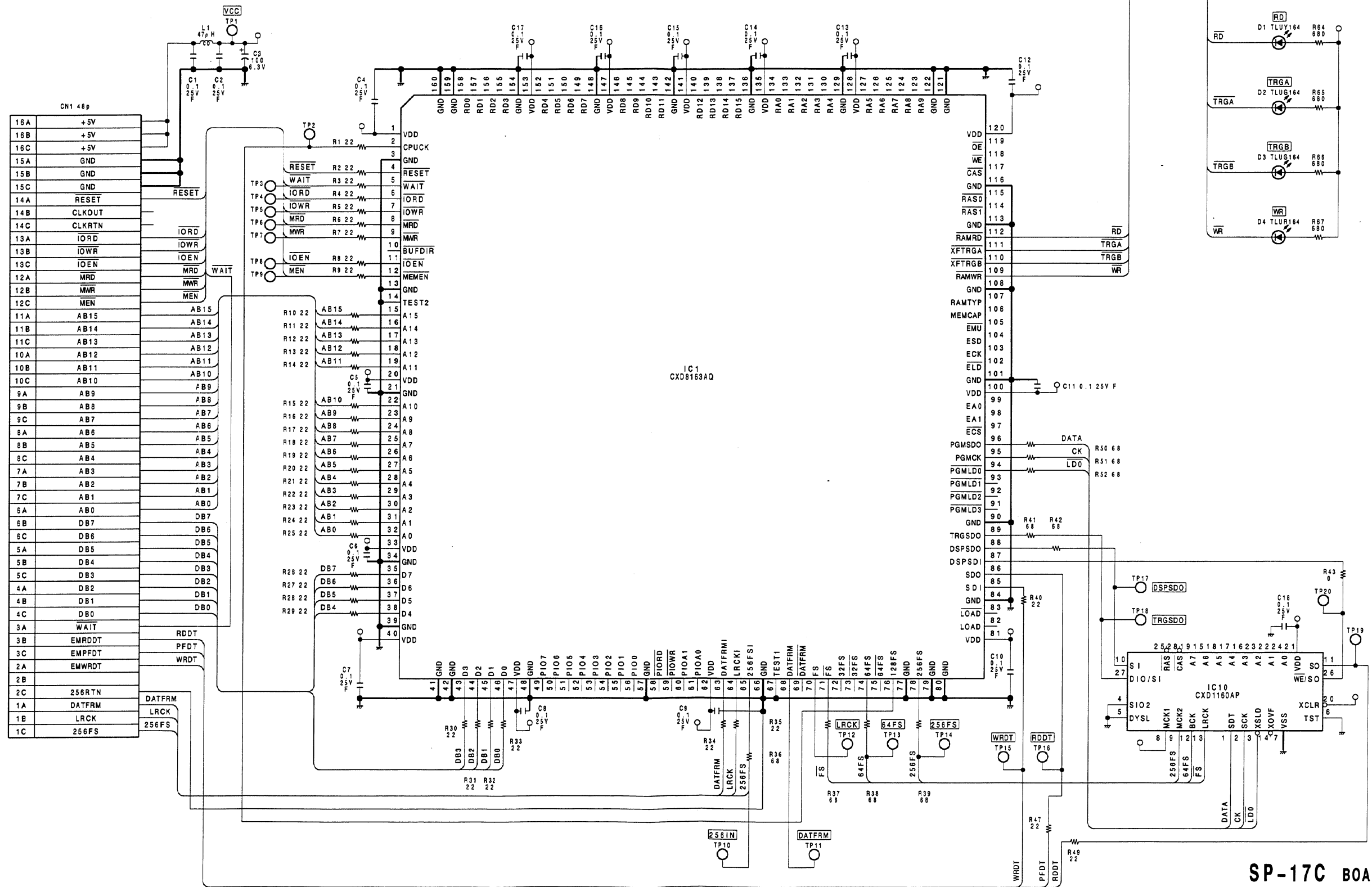
G

H

SP-17C

SP-17C

SP-17C BOARD (PCM-7030) Signal Processor



SP-17C BOARD

BOARD NO.1-640-802-11 & HIGHER
PCM-7030

C-83

C-84

A

B

C

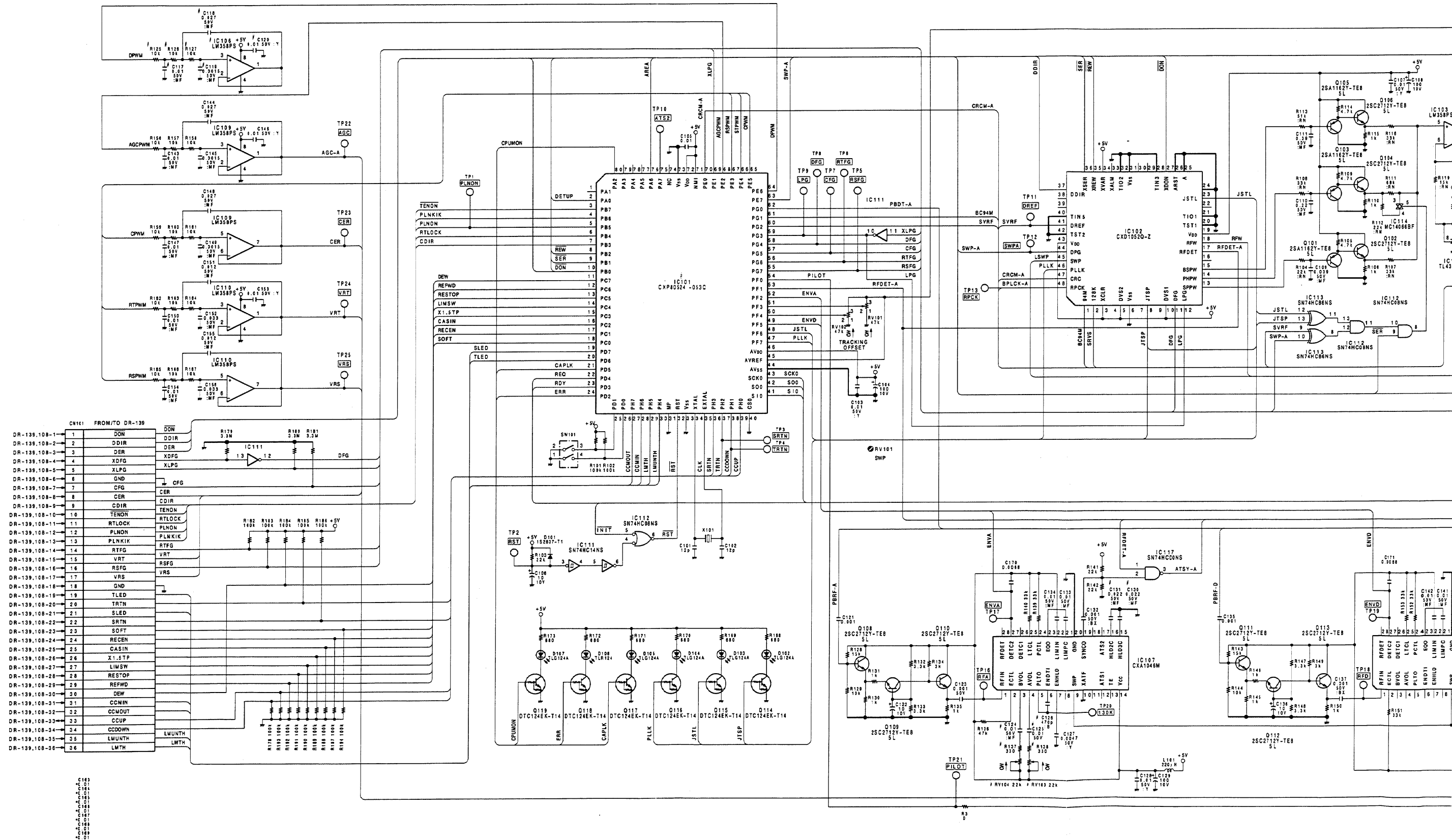
D

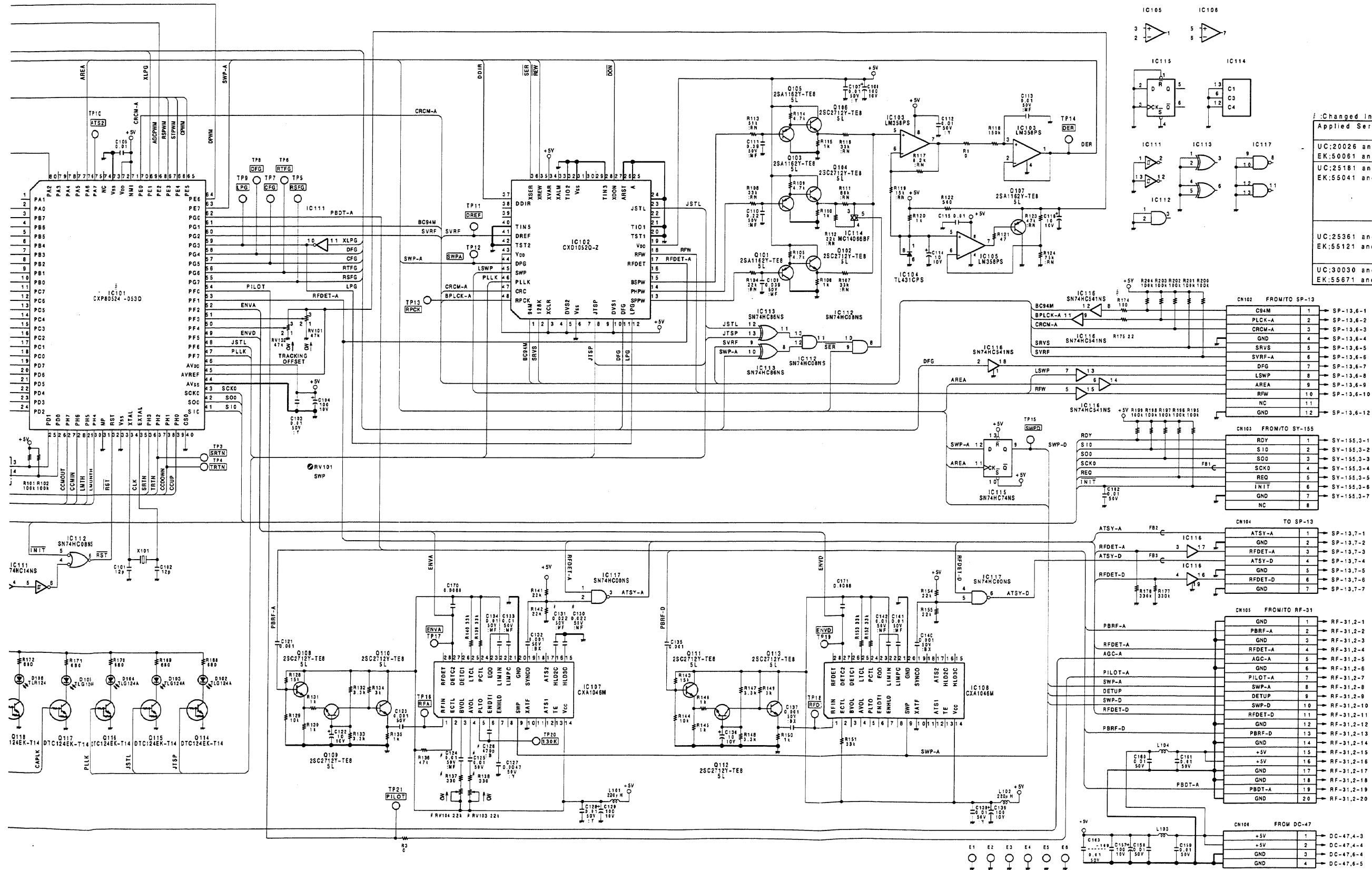
E

F

G

H

SV-123 BOARD (PCM-7030)
Servo



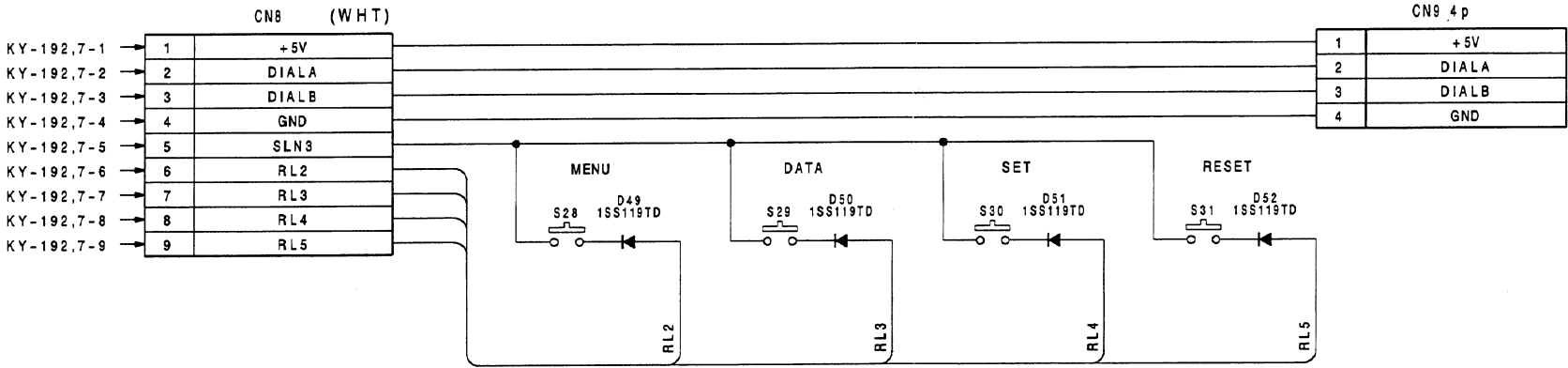
i :Changed Information

Applied Serial No.	Parts that have been changed.	Parts that have been deleted.
UC:20026 and higher EK:50061 and higher	C130 C131	
UC:25181 and higher EK:55041 and higher		C117,118,119 C120,124,125,126 IC106 R125,126,127 R137,138 RV103,104
UC:25361 and higher EK:55121 and higher	IC101 CXP80524-027Q ↓ CXP80524-053Q	
UC:30030 and higher EK:55671 and higher	R174 22 → 100	

SV-123 BOARD

BOARD NO.1-637-263-11 & HIGHER
PCM-7030

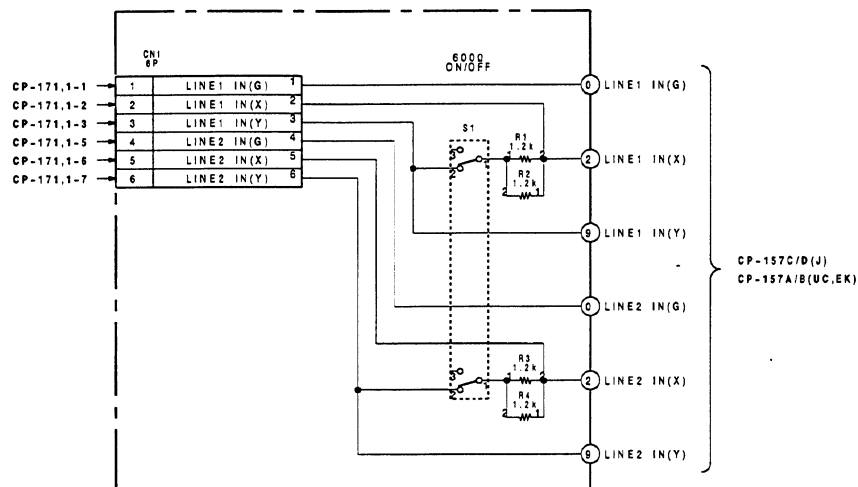
SW-420 BOARD (PCM-7030)
Switch(MENU)



SW-420 BOARD
BOARD NO.1-637-270-11 & HIGHER
PCM-7030

SW-426 BOARD (PCM-7030)

Switch(600Ω)

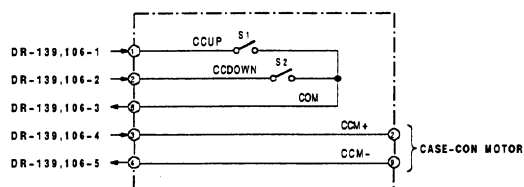


SW-426 BOARD

BOARD NO.1-637-279-11 & HIGHER
PCM-7030

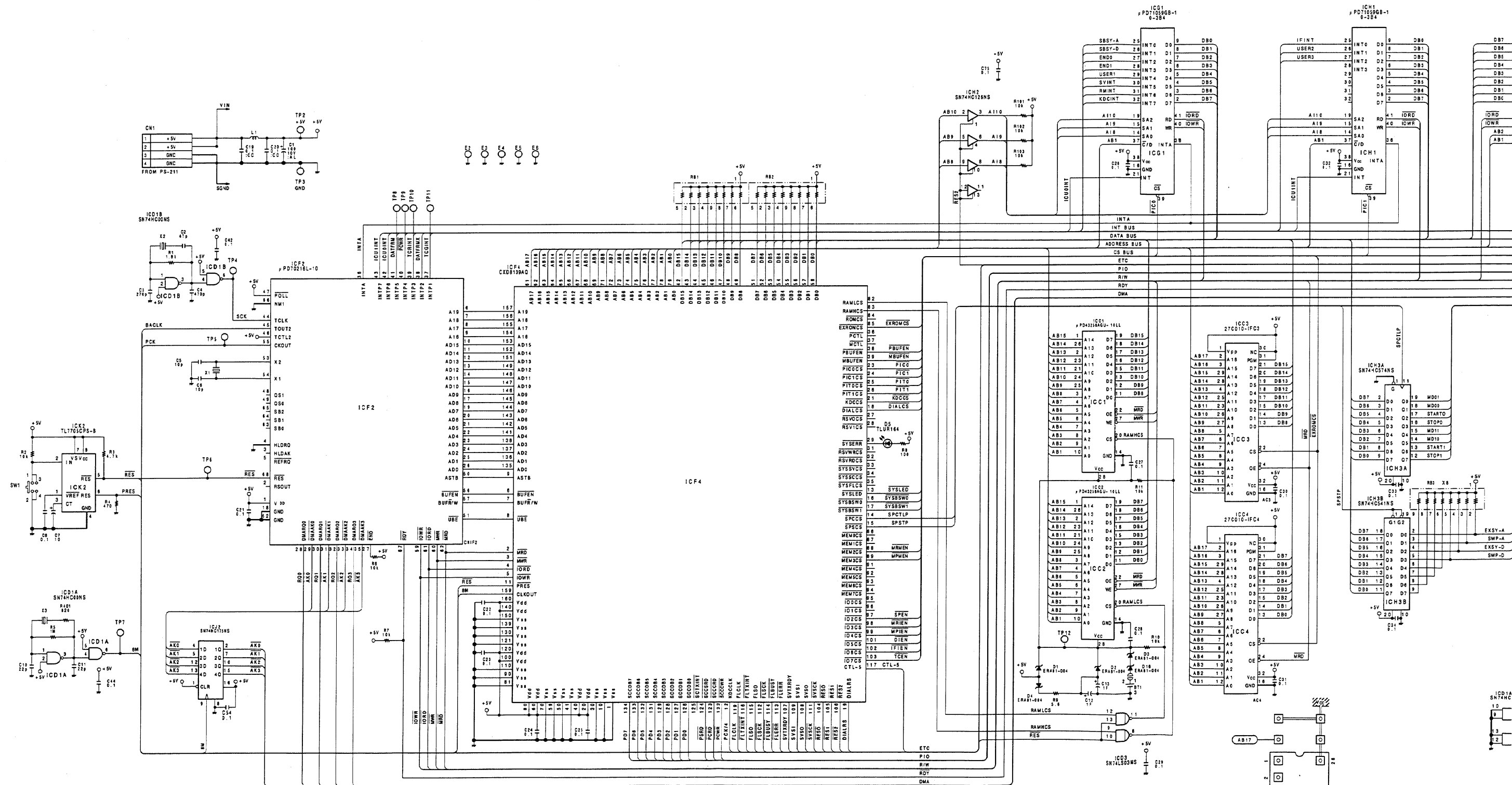
SW-452 BOARD (PCM-7030)

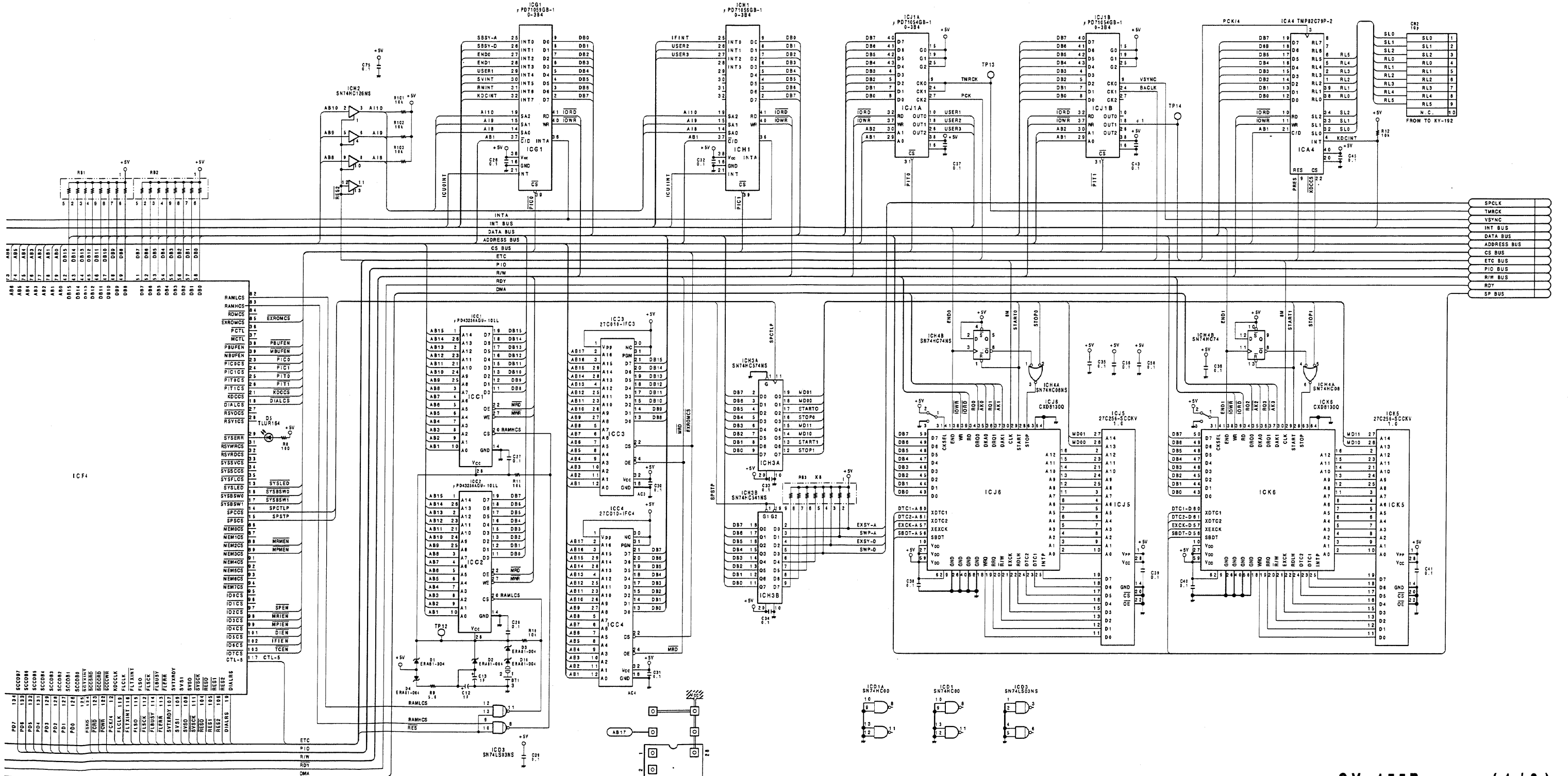
Switch(CASSETTE)



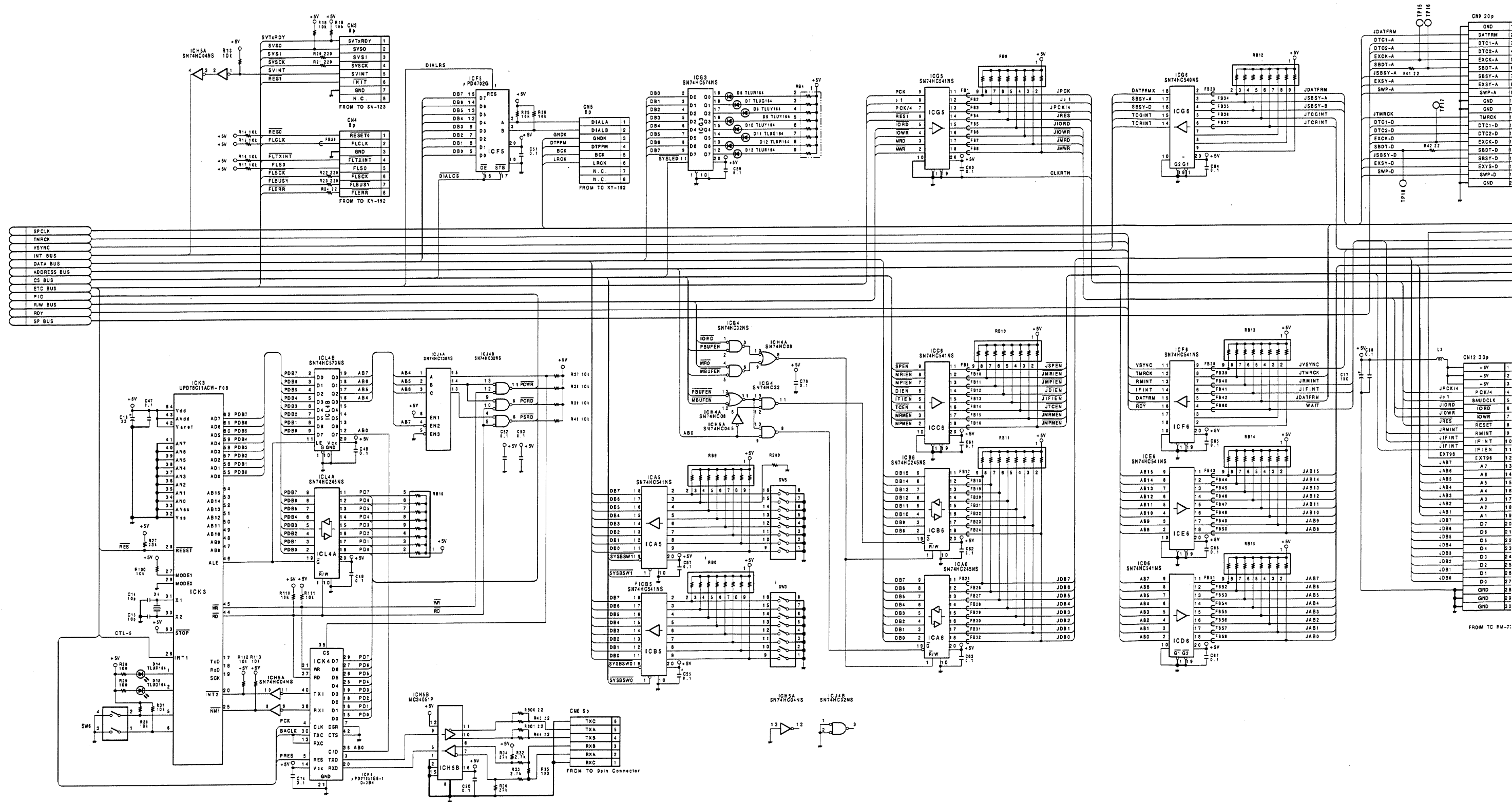
SW-452 BOARD

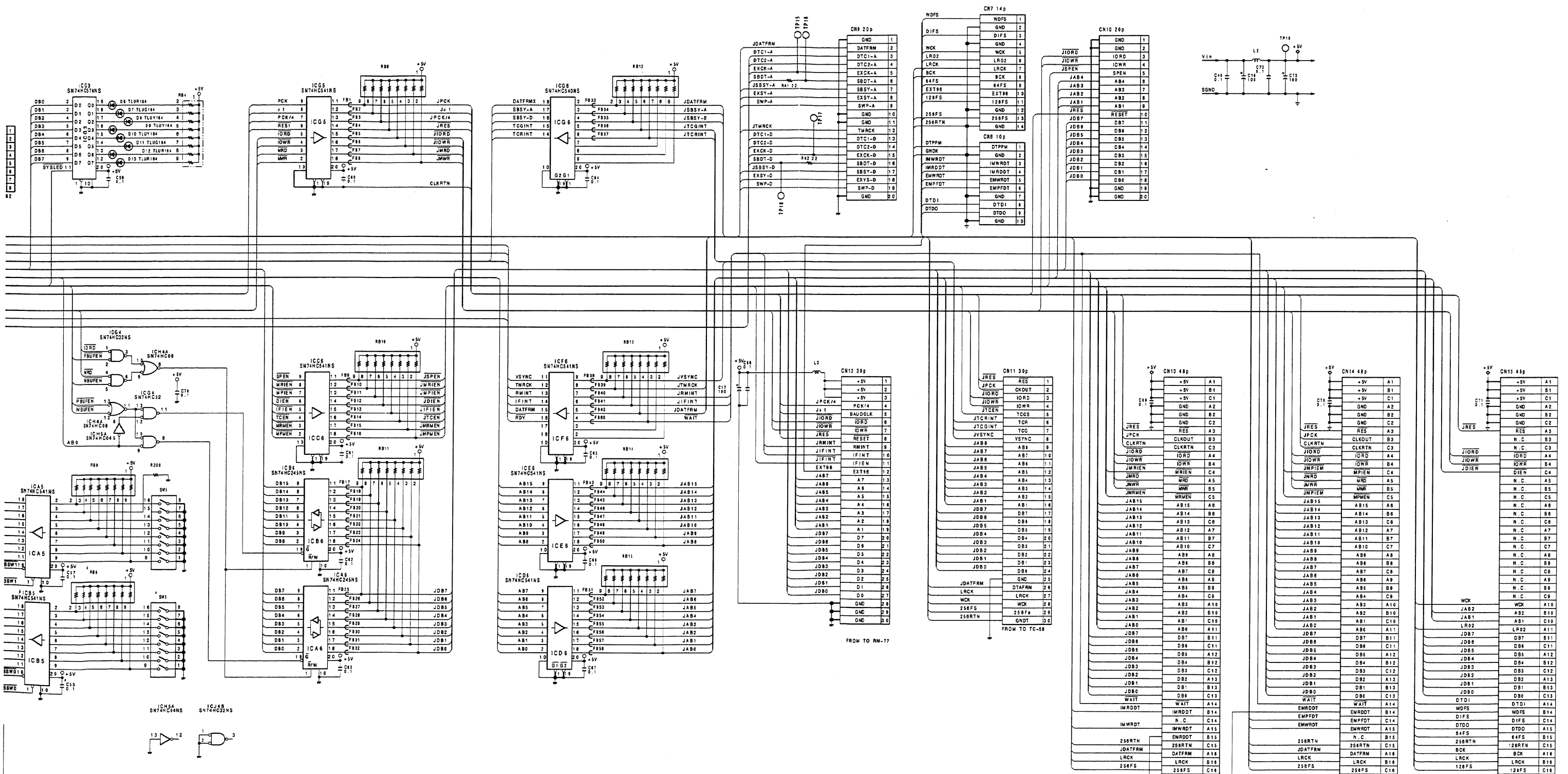
BOARD NO.1-637-287-11 & HIGHER
PCM-7030

SY-155B(1/2) BOARD (PCM-7030)
System Control



SY-155B BOARD (1/2)
BOARD NO.1-637-266-11 & HIGHER
PCM-7030

SY-155B(2/2) BOARD (PCM-7030)
System Control

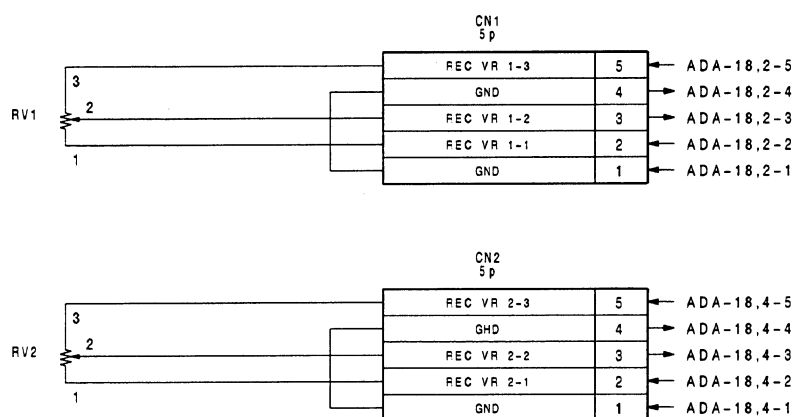


Applied Serial No.	Parts that have been deleted.
UC 25181 and higher	C55
EK 55041 and higher	ICB5
	RB6
	SW3

SY-155B BOARD (2 / 2)

BOARD NO.1-637-266-11 & HIGHER
PCM-7030

VR-109 BOARD (PCM-7030)
Level Control



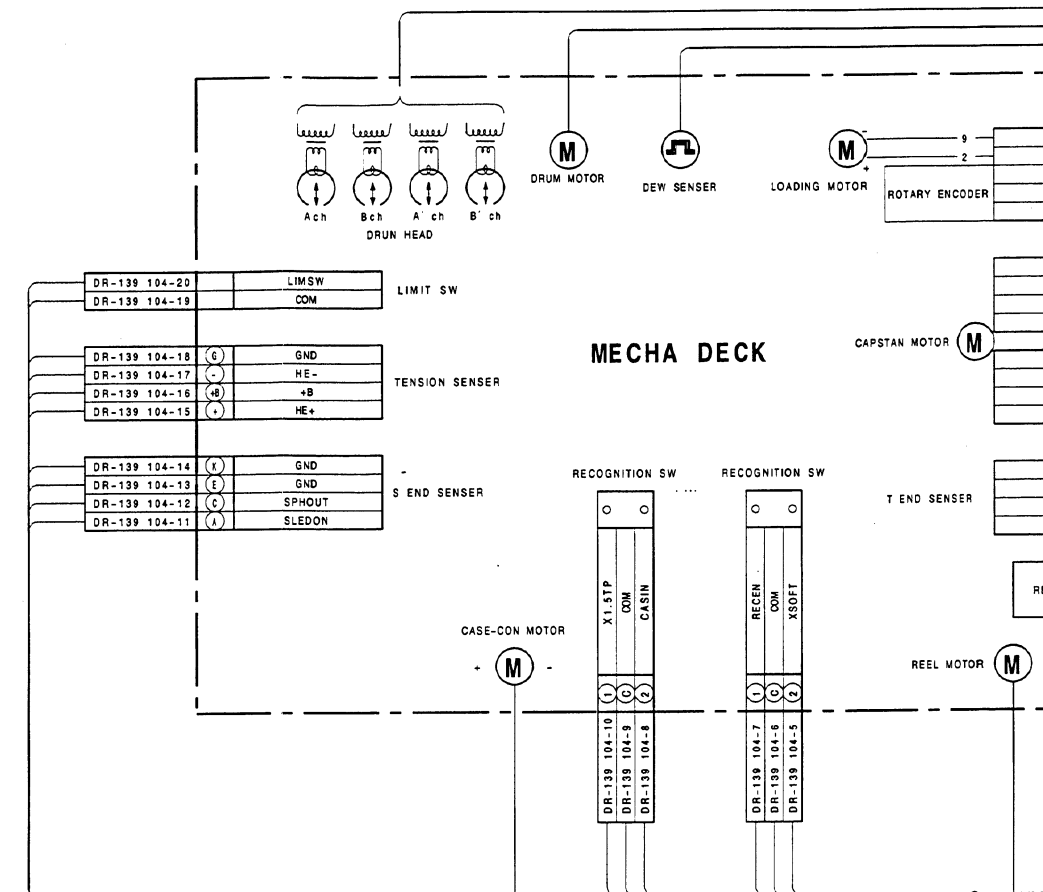
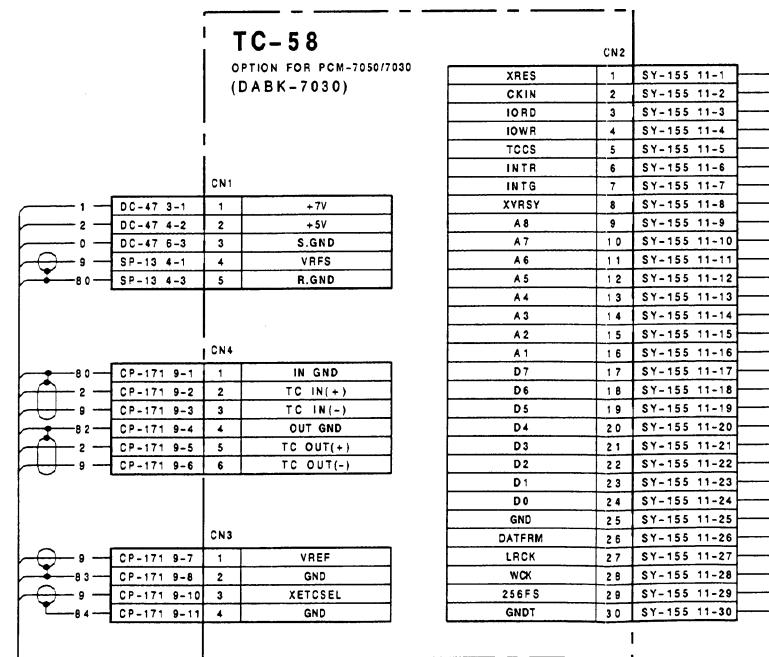
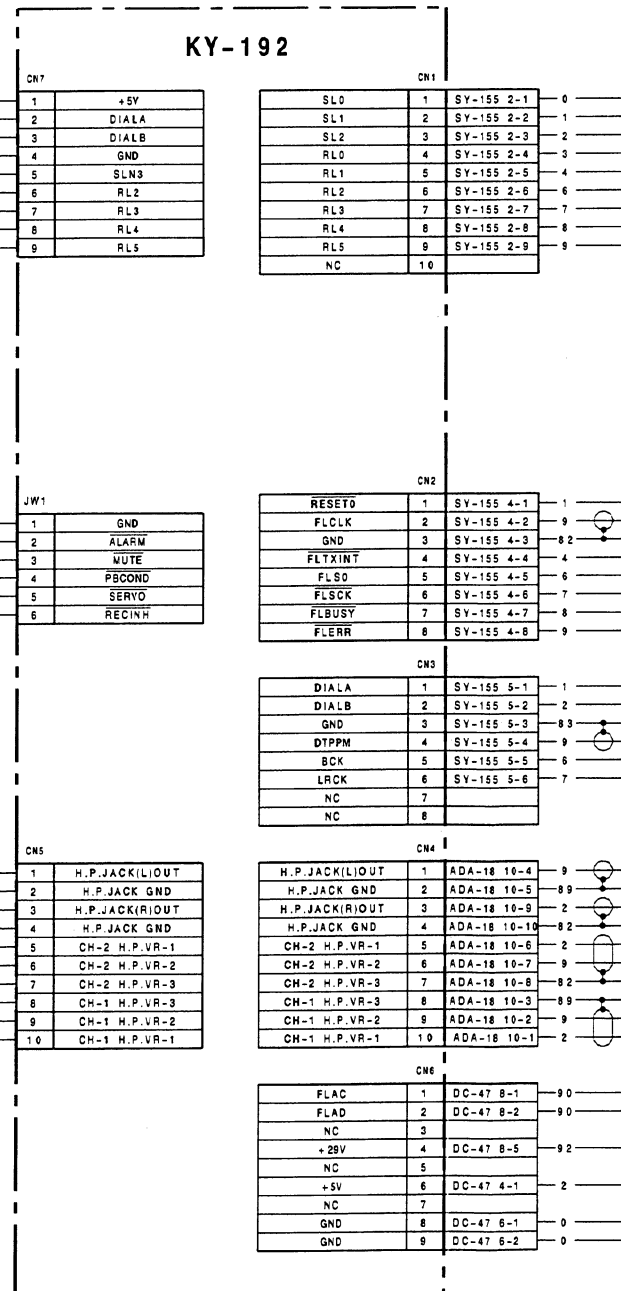
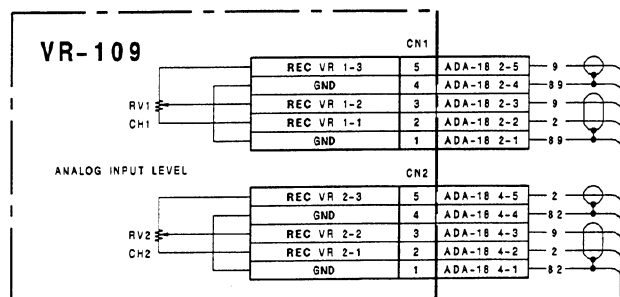
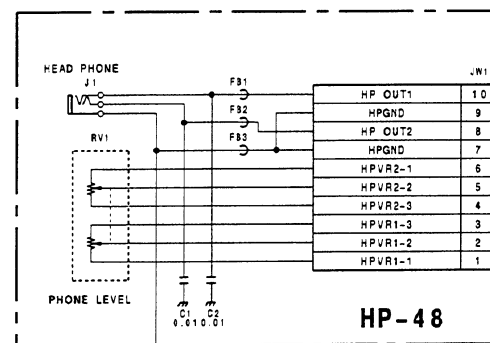
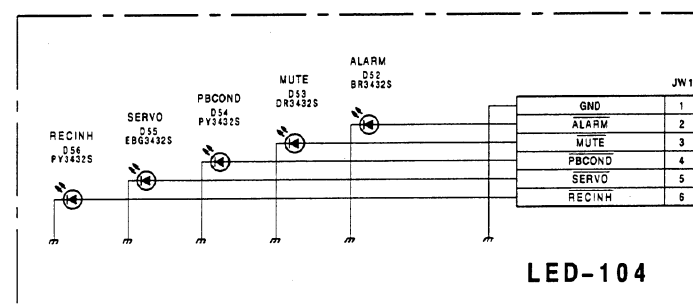
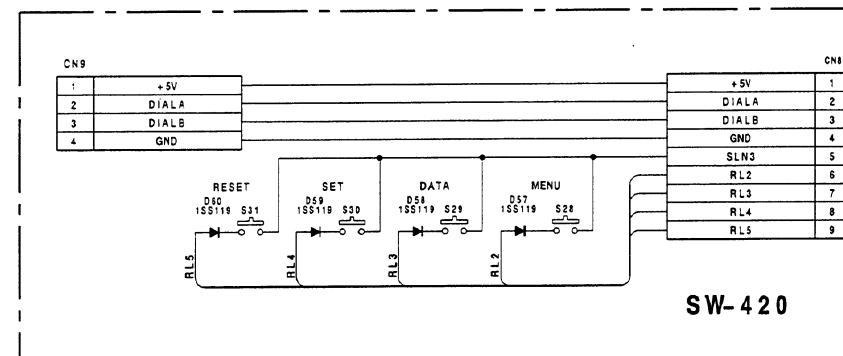
VR-109 BOARD

BOARD NO.1-637-284-12 & HIGHER
PCM-7030

FRAME(1/4)

FRAME(1/4)

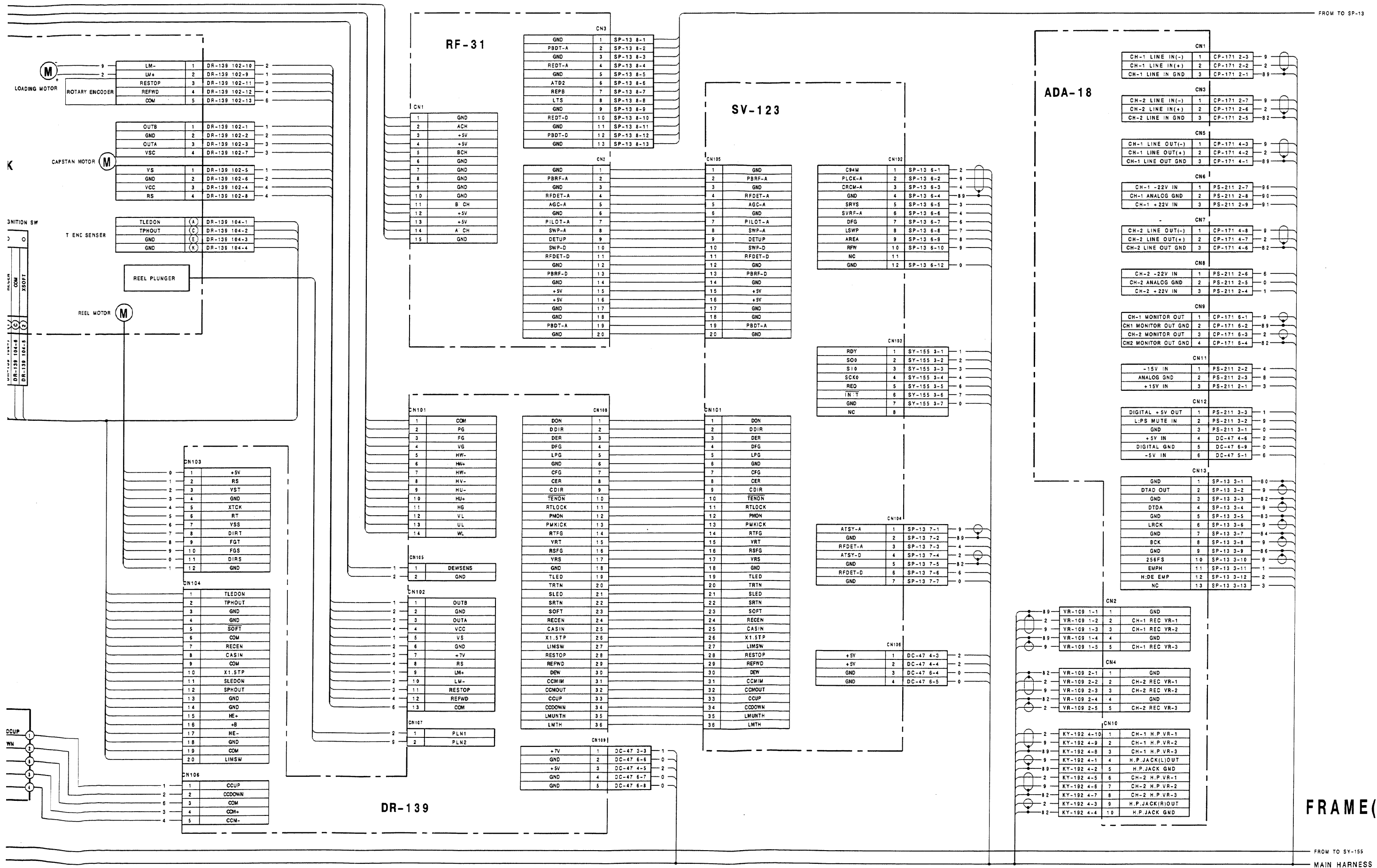
FRAME(1/4)



C-114

G

H



FROM TO RF-31

CN8		
RF-31 3-1	1	GND
RF-31 3-2	2	PBDT-A
RF-31 3-3	3	GND
RF-31 3-4	4	REDT-A
RF-31 3-5	5	GND
RF-31 3-6	6	ATD2
RF-31 3-7	7	REPB
RF-31 3-8	8	LTS
RF-31 3-9	9	GND
RF-31 3-10	10	REDT-D
RF-31 3-11	11	GND
RF-31 3-12	12	PBDT-D
RF-31 3-13	13	GND

CN3		
ADA-18 13-1	1	GND
ADA-18 13-2	2	DTAD
ADA-18 13-3	3	GND
ADA-18 13-4	4	DTDA
ADA-18 13-5	5	GND
ADA-18 13-6	6	LACK
ADA-18 13-7	7	GND
ADA-18 13-8	8	BCK
ADA-18 13-9	9	GND
ADA-18 13-10	10	256FS
ADA-18 13-11	11	EMP
ADA-18 13-12	12	DEEMP
ADA-18 13-13	13	RESET

CN4		
TC-58 1-4	1	VRF5
TC-58 1-5	2	NC
TC-58 1-6	3	GND

CN6		
SV-123 102-1	1	C94M
SV-123 102-2	2	PLCK-A
SV-123 102-3	3	CRCM-A
SV-123 102-4	4	GND
SV-123 102-5	5	SRYS
SV-123 102-6	6	SVRF
SV-123 102-7	7	DFG
SV-123 102-8	8	LSWP
SV-123 102-9	9	AREA
SV-123 102-10	10	RFW
SV-123 102-11	11	NC
SV-123 102-12	12	GND

CN7		
SV-123 104-1	1	ATSY-A
SV-123 104-2	2	GND
SV-123 104-3	3	RFDET-A
SV-123 104-4	4	ATSY-D
SV-123 104-5	5	GND
SV-123 104-6	6	RFDET-D
SV-123 104-7	7	GND

CN11		
1	CKRS-A	
2	CLK	
3	GND	
4	D0-A	
5	D1-A	
6	D2-A	
7	D3-A	
8	D4-A	
9	D5-A	
10	D6-A	
11	D7-A	
12	MNTG-A	
13	SWP-A	

CN12		
1	CKRS-D	
2	CLK	
3	GND	
4	D0-D	
5	D1-D	
6	D2-D	
7	D3-D	
8	D4-D	
9	D5-D	
10	D6-D	
11	D7-D	
12	MNTG-D	
13	SWP-D	

CN9		
GND	1	
DATFRM	2	
DTC1-A	3	
DTC2-A	4	
EXCK-A	5	
SBDT-A	6	
SBSY-A	7	
EXSY-A	8	
SWP-A	9	
GND	10	
GND	11	
TMCK	12	
DTC1-D	13	
DTC2-D	14	
EXCK-D	15	
SBDT-D	16	
SBSY-D	17	
EXSY-D	18	
SWP-D	19	
GND	20	

CN10		
GND	1	
GND	2	
IORD	3	
IOWR	4	
SPEN	5	
AB4	6	
AB3	7	
AB2	8	
AB1	9	
RESET	10	
DB7	11	
DB6	12	
DB5	13	
DB4	14	
DB3	15	
DB2	16	
DB1	17	
DB0	18	
GND	19	
GND	20	

CN11		
DTPPM	1	SY-155 8-1
GND	2	SY-155 8-2
IMWRDT	3	SY-155 8-3
IMRDDT	4	SY-155 8-4
ENWRDT	5	SY-155 8-5
ENPRDT	6	SY-155 8-6
GND	7	SY-155 8-7
OTDI	8	SY-155 8-8
DTDO	9	SY-155 8-9
GND	10	SY-155 8-10

CN2		
WDFS	1	SY-155 7-1
GND	2	SY-155 7-2
DIFS	3	SY-155 7-3
GND	4	SY-155 7-4
WCK	5	SY-155 7-5
LRC2	6	SY-155 7-6
LRC1	7	SY-155 7-7
BCK	8	SY-155 7-8
64FS	9	SY-155 7-9
EXT96	10	SY-155 7-10
128FS	11	SY-155 7-11
GND	12	SY-155 7-12
256FS	13	SY-155 7-13
GND	14	SY-155 7-14

CN5		
-5V	1	DC-47 5-3
+5V	2	DC-47 4-7
+5V	3	DC-47 4-8
GND	4	DC-47 6-10
GND	5	DC-47 7-1
GND	6	DC-47 7-2

SP-13

CN8		
GND	1	
DATFRM	2	
DTC1-A	3	
DTC2-A	4	
EXCK-A	5	
SBDT-A	6	
SBSY-A	7	
EXSY-A	8	
SWP-A	9	
GND	10	
GND	11	
TMCK	12	
DTC1-D	13	
DTC2-D	14	
EXCK-D	15	
SBDT-D	16	
SBSY-D	17	
EXSY-D	18	
SWP-D	19	
GND	20	

CN10		
GND	1	
GND	2	
IORD	3	
IOWR	4	
SPEN	5	
AB4	6	
AB3	7	
AB2	8	
AB1	9	
RESET	10	
DB7	11	
DB6	12	
DB5	13	
DB4	14	
DB3	15	
DB2	16	
DB1	17	
DB0	18	
GND	19	
GND	20	

CN11		
VCK-2 2-1	1	RES
VCK-2 2-2	2	CKOUT
VCK-2 2-3	3	IORD
VCK-2 2-4	4	IOWR
VCK-2 2-5	5	TCCS
VCK-2 2-6	6	TCR
VCK-2 2-7	7	TCG
VCK-2 2-8	8	VSYNC
VCK-2 2-9	9	AB8
VCK-2 2-10	10	AB7
VCK-2 2-11	11	AB6
VCK-2 2-12	12	AB5
VCK-2 2-13	13	AB4
VCK-2 2-14	14	AB3
VCK-2 2-15	15	AB2
VCK-2 2-16	16	AB1
VCK-2 2-17	17	DB7
VCK-2 2-18	18	DB6
VCK-2 2-19	19	DB5
VCK-2 2-20	20	DB4
VCK-2 2-21	21	DB3
VCK-2 2-22	22	DB2
VCK-2 2-23	23	DB1
VCK-2 2-24	24	DB0
VCK-2 2-25	25	GND
VCK-2 2-26	26	DATFRM
VCK-2 2-27	27	LRC1
VCK-2 2-28	28	WCK
VCK-2 2-29	29	256FS
VCK-2 2-30	30	GND

SY-155

CN2		
KY-192 1-1	1	SL0
KY-192 1-2	2	SL1
KY-192 1-3	3	SL2
KY-192 1-4	4	RL0
KY-192 1-5	5	RL1
KY-192 1-6	6	RL2
KY-192 1-7	7	RL3
KY-192 1-8	8	RL4
KY-192 1-9	9	RL5
KY-192 1-10	10	NC

CN3		
SV-123 103-1	1	SVTXRDY
SV-123 103-2	2	SVS0
SV-123 103-3	3	SVS1
SV-123 103-4	4	SVSCK
SV-123 103-5	5	SVINT
SV-123 103-6	6	INIT
SV-123 103-7	7	GND
SV-123 103-8	8	NC

CN4		
KY-192 2-1	1	RESET0
KY-192 2-2	2	FLCLK
KY-192 2-3	3	GND
KY-192 2-4	4	FLTXINT
KY-192 2-5	5	FLS0
KY-192 2-6	6	FLSCK
KY-192 2-7	7	FLBUSY
KY-192 2-8	8	FLERR

CN5		
KY-192 3-1	1	DIALA
KY-192 3-2	2	DIALB
KY-192 3-3	3	GND
KY-192 3-4	4	DTPPM
KY-192 3-5	5	BCK
KY-192 3-6	6	LRC1
KY-192 3-7	7	NC
KY-192 3-8	8	NC

CN7		
SP-13 2-1	1	WDFS
SP-13 2-2	2	GND
SP-13 2-3	3	DIFS
SP-13 2-4	4	GND
SP-13 2-5	5	WCK
SP-13 2-6	6	LRC2
SP-13 2-7	7	LRC1
SP-13 2-8	8	BCK
SP-13 2-9	9	64FS
SP-13 2-10	10	EXT96
SP-13 2-11	11	128FS
SP-13 2-12	12	GND
SP-13 2-13	13	256FS
SP-13 2-14	14	GND

CN8		
SP-13 1-1	1	DTPPM
SP-13 1-2	2	GND
SP-13 1-3	3	IMWRDT
SP-13 1-4	4	IMRDDT
SP-13 1-5	5	EMWRDT
SP-13 1-6	6	EMPRDT
SP-13 1-7	7	GND
SP-13 1-8	8	OTDI
SP-13 1-9	9	DTDO
SP-13 1-10	10	GND

SP-17B or
MEM-40B
OPTION FOR PCM-7030
(DABK-7032)

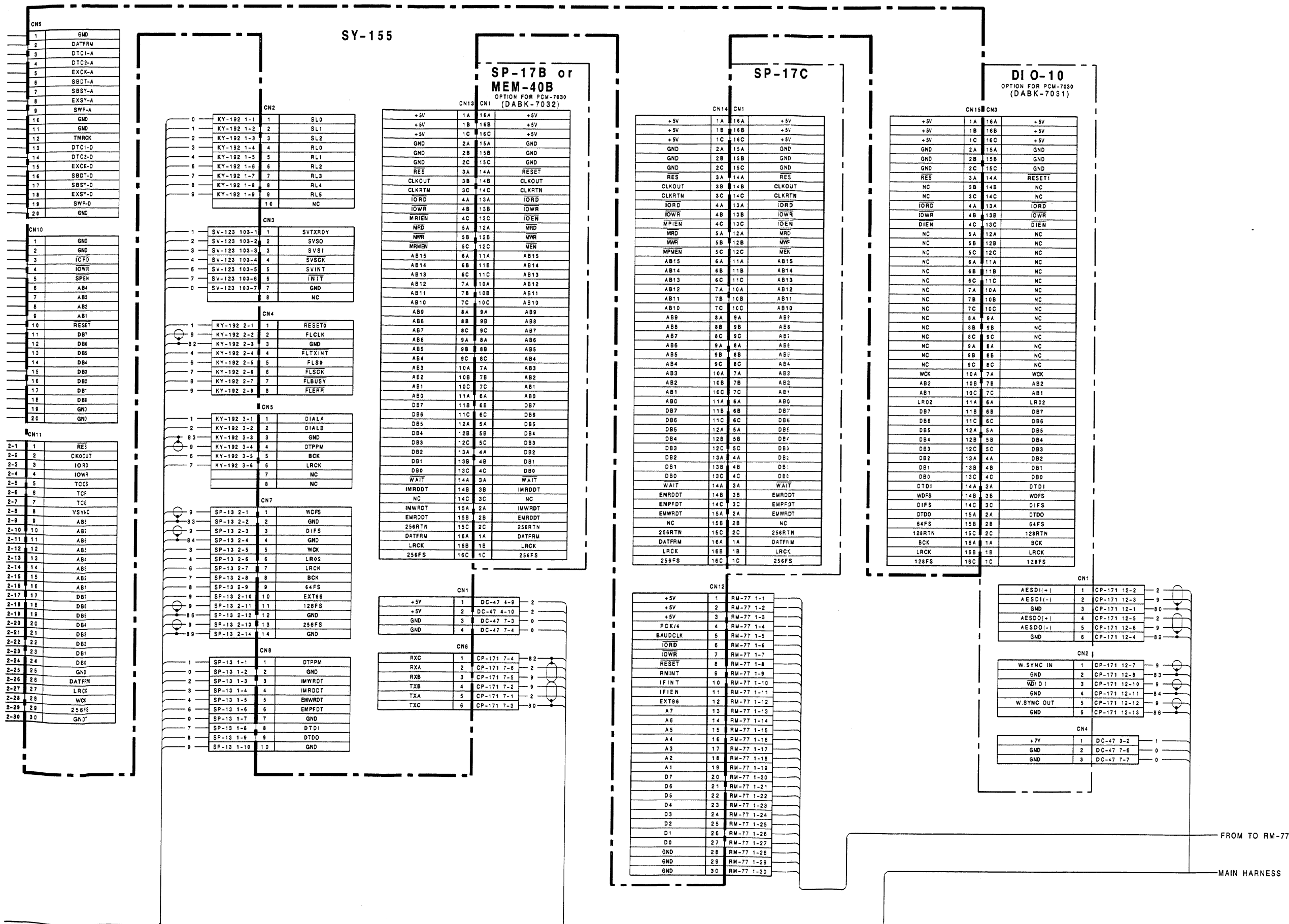
CN13		
+5V	1A	16A
+5V	1B	16B
+5V	1C	16C
+5V	1D	16D
GND	2A	15A
GND	2B	15B
GND	2C	15C
GND	2D	15D
RES	3A	14A
CLKOUT	3B	14B
CLKRTN	3C	14C
IORD	4A	13A
IOWR	4B	13B
MPREN	4C	13C
MPREN	4D	13D
MRD	5A	12A
MRD	5B	12B
MRD	5C	12C
MRD	5D	12D
MPMEN	6A	11A
MPMEN	6B	11B
MPMEN	6C	11C
MPMEN	6D	11D
AB15	7A	10A
AB14	7B	10B
AB13	7C	10C
AB12	7D	10D
AB11	8A	9A
AB10	8B	9B
AB9	8C	9C
AB8	8D	9D
AB7	9A	8A
AB6	9B	8B
AB5	9C	8C
AB4	9D	8D
AB3	10A	7A
AB2	10B	7B
AB1	10C	7C
AB0	10D	7D
DB7	11A	6A
DB6	11B	6B
DB5	11C	6C
DB4	11D	6D
DB3	12A	5A
DB2	12B	5B
DB1	12C	5C
DB0	12D	5D
WAIT	13A	4A
WAIT	13B	4B
WAIT	13C	4C
WAIT	13D	4D
IMRDDT	14A	3A
IMRDDT	14B	3B
IMRDDT	14C	3C
IMRDDT	14D	3D
EMWRDT	15A	2A
EMWRDT	15B	2B
EMWRDT	15C	2C
EMWRDT	15D	2D
256RTN	16A	1A
256RTN	16B	1B
256RTN	16C	1C
256RTN	16D	1D

CN1		
+5V	1	DC-47 4-9
+5V	2	DC-47 4-10
GND	3	DC-47 7-3
GND	4	DC-47 7-4

CN6		
RXC	1	CP-171 7-4
RXA	2	CP-171 7-6
RXB	3	CP-171 7-5
TXB	4	CP-171 7-2
TXA	5	CP-171 7-1
TXC	6	CP-171 7-3

SP-17C

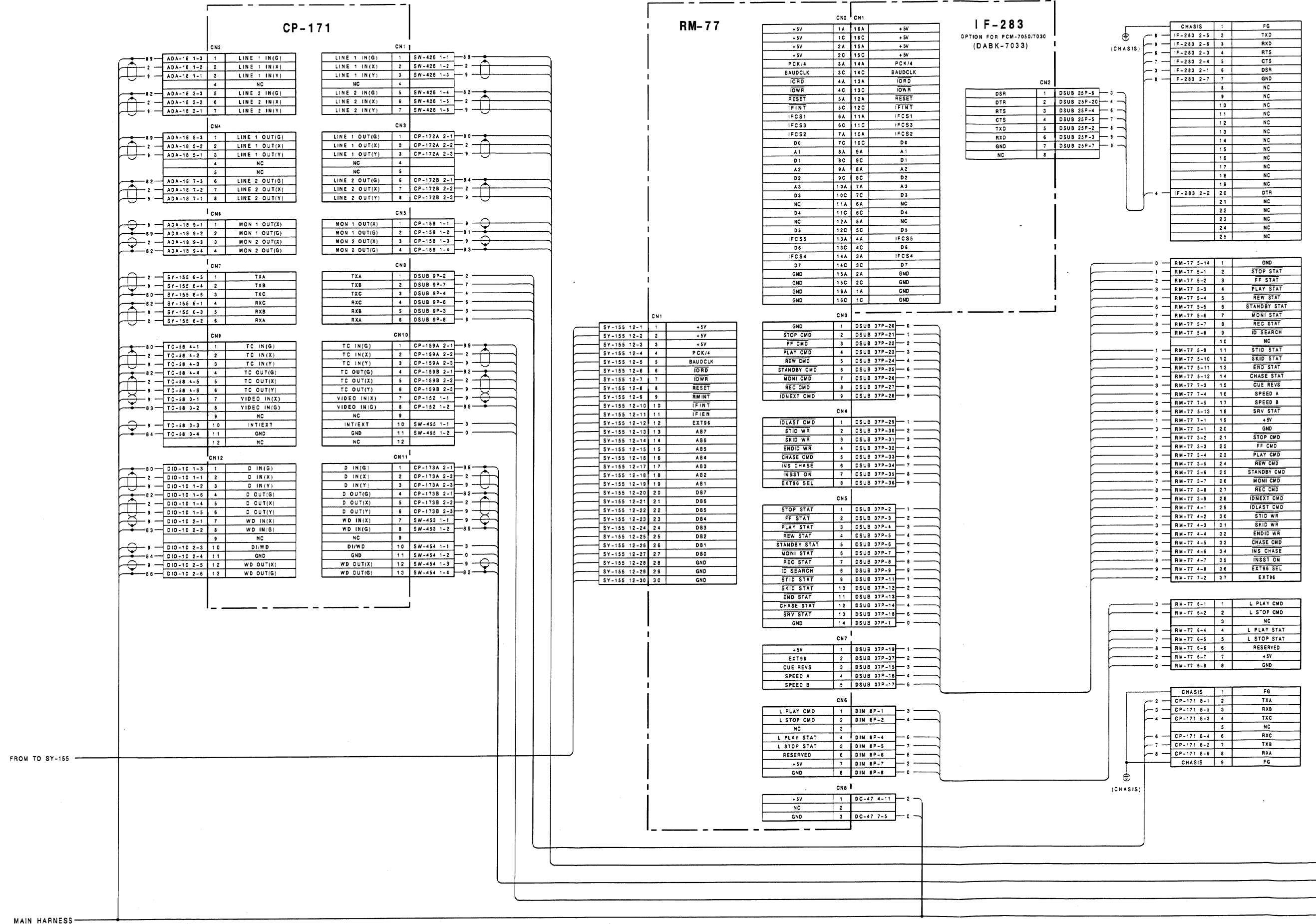
CN14			CN1		
+5V	1A	16A			+5V
+5V	1B	16B			+5V
+5V	1C	16C			+5V
GND	2A	15A			GND
GND	2B	15B			GND
GND	2C	15C			GND
RES	3A	14A			RES
CLKOUT	3B	14B			CLKOUT
CLKRTN	3C	14C			CLKRTN
IORD	4A	13A			IORD
IOWR	4B	13B			IOWR
MPDEN	4C	13C			IDEN
MRD	5A	12A			MRD
MWR	5B	12B			MWR
MPMEN	5C	12C			MEN
AB15	6A	11A			AB15
AB14	6B	11B			AB14
AB13	6C	11C			AB13
AB12	7A	10A			AB12
AB11	7B	10B			AB11
AB10	7C	10C			AB10
AB9	8A	9A			AB9
AB8	8B	9B			AB8
AB7	8C	9C			AB7
AB6	8A	8A			AB6
AB5	9B	8B			AB5
AB4	9C	8C			AB4
AB3	10A	7A			AB3
AB2	10B	7B			AB2
AB1	10C	7C			AB1
AB0	11A	6A			AB0
DB7	11B	6B			DB7
DB6	11C	6C			DB6
DB5	12A	5A			DB5
DB4	12B	5B			DB4
DB3	12C	5C			DB3
DB2	13A	4A			DB2
DB1	13B	4B			DB1
DB0	13C	4C			DB0
WAIT	14A	3A			WAIT
EMPRDST	14B	3B			EMPRDST
EMPFDT	14C	3C			EMPFDT
EMWRDST	15A	2A			EMWRDST
NC	15B	2B			NC
256RTN	15C	2C			256RTN
DATFRM	16A	1A			DATFRM
LRCK	16B	1B			LRCK
256FS	16C	1C			256FS



FRAME(3/4)

FRAME(3/4)

FRAME(3/4)



C-127

C-128

A

B

C

D

E

F

G

H

FRAME(3/4)

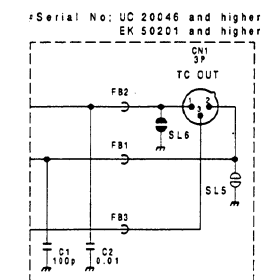
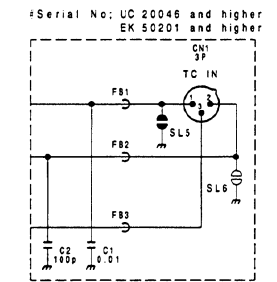
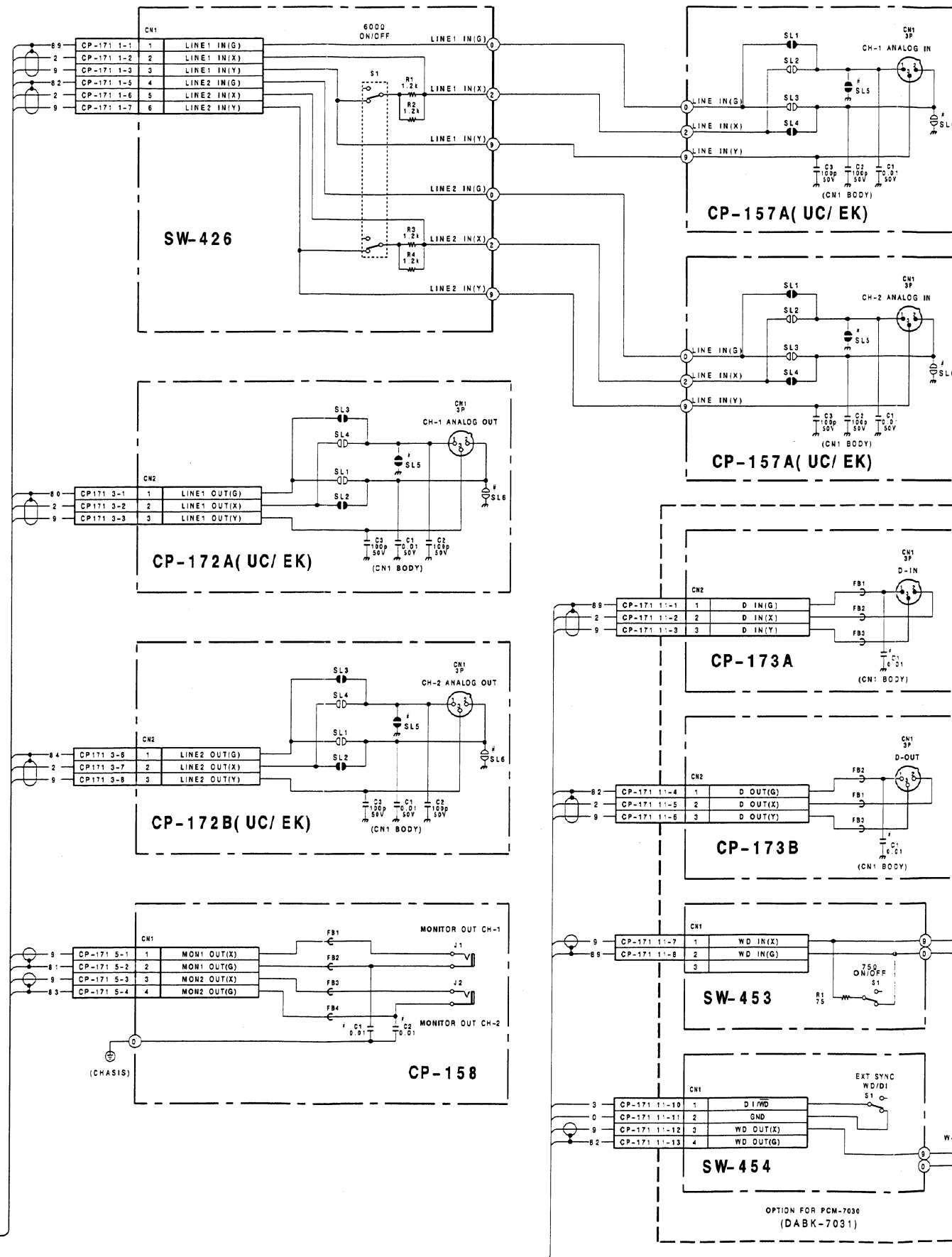
FRAME(3/4)

8	1	FG
2-5	2	TXD
2-6	3	RXD
2-3	4	RTS
2-4	5	CTS
2-1	6	DSR
2-7	7	GND
8	8	NC
9	9	NC
10	10	NC
11	11	NC
12	12	NC
13	13	NC
14	14	NC
15	15	NC
16	16	NC
17	17	NC
18	18	NC
19	19	NC
2-2	20	DTR
21	21	NC
22	22	NC
23	23	NC
24	24	NC
25	25	NC

-14	1	GND
-1	2	STOP STAT
-2	3	FF STAT
-3	4	PLAY STAT
-4	5	REW STAT
-5	6	STANDBY STAT
-6	7	MONI STAT
-7	8	REC STAT
-8	9	ID SEARCH
-9	10	NC
-10	11	STID STAT
-11	12	SKID STAT
-12	13	END STAT
-13	14	CHASE STAT
-14	15	CUE REVS
-15	16	SPEED A
-16	17	SPEED B
-17	18	SRV STAT
-18	19	+5V
-19	20	GND
-20	21	STOP CMD
-21	22	FF CMD
-22	23	PLAY CMD
-23	24	REW CMD
-24	25	STANDBY CMD
-25	26	MONI CMD
-26	27	REC CMD
-27	28	IDNEXT CMD
-28	29	IDLAST CMD
-29	30	STID WR
-30	31	SKID WR
-31	32	ENDID WR
-32	33	CHASE CMD
-33	34	INS CHASE
-34	35	INSST ON
-35	36	EXT96 SEL
-36	37	EXT95

-1	1	L PLAY CMD
-2	2	L STOP CMD
-3	3	NC
-4	4	L PLAY STAT
-5	5	L STOP STAT
-6	6	RESERVED
-7	7	+5V
-8	8	GND

1	1	FG
1-1	2	TXA
1-5	3	RXB
1-3	4	TXC
5	5	NC
1-4	6	RXC
1-2	7	TXB
1-8	8	RXA
1	9	FG



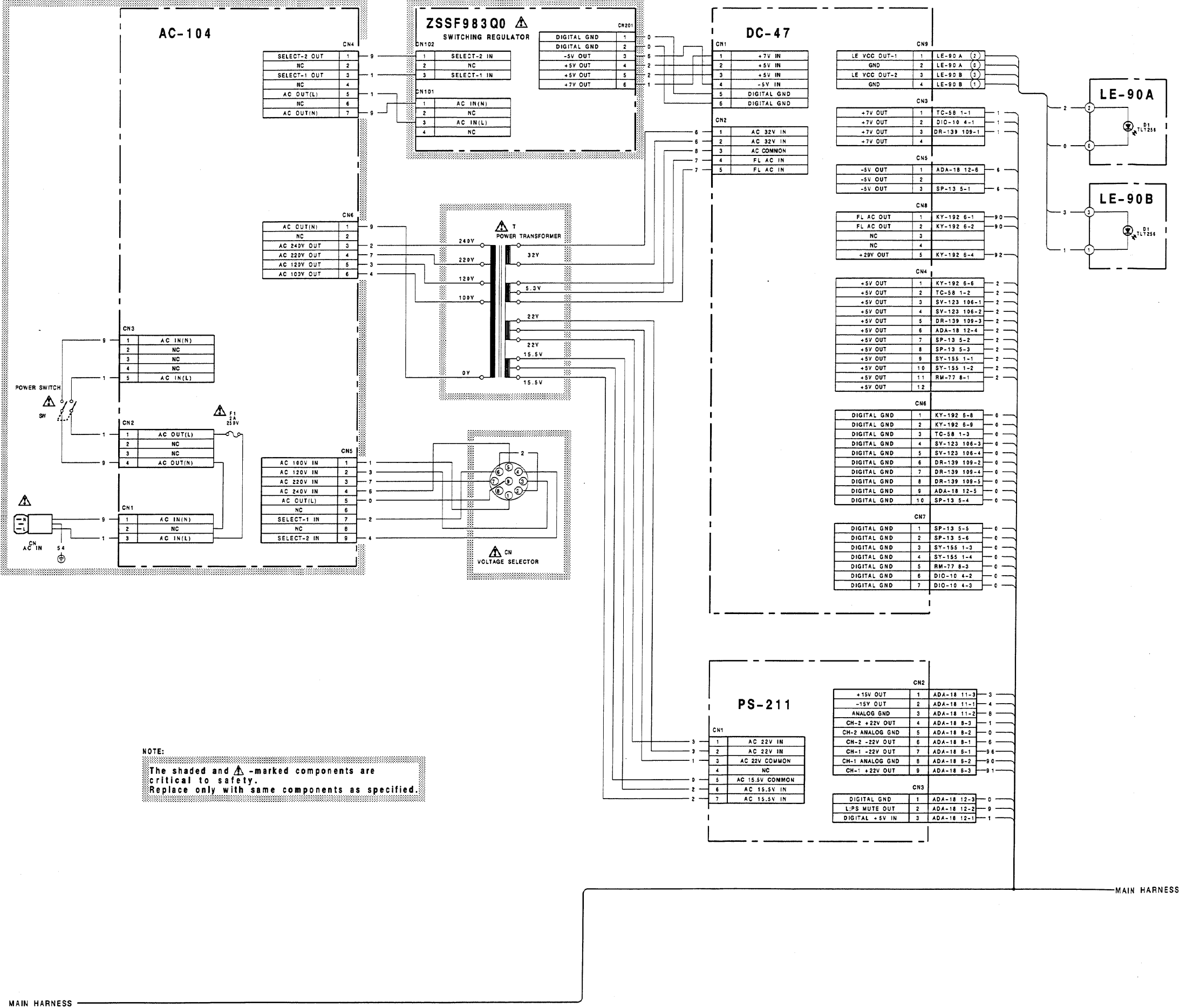
Applied Serial No.	Parts that have been added.	Parts that have been deleted.
UC;20046 and higher EK;50201 and higher	SL5 SL6	C1(CP-158,CP-173A,CP-173B BOARD) C2(CP-158 BOARD)

FRAME(3/4)

MAIN HARNESS

C-129

C-130



SECTION D

SEMICONDUCTOR PIN ASSIGNMENTS

この章の図の中には互換性のないダイオード、トランジスタ、ICが併記されていることがあります。部品を交換するときには必ず部品表を参照してください。

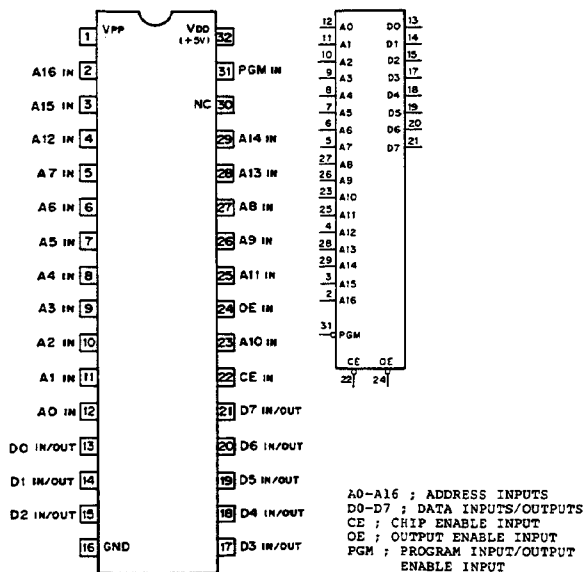
等価回路はICメーカーのData Bookに従いました。

The chart in this section may sometimes show diodes, transistors, and ICs that are not interchangeable. When replacing a component, be sure to refer to the parts list. The circuit diagram of each IC is obtained from the IC data book published by the manufacturer.

IC	PAGE	IC	PAGE	TRANSISTOR	PAGE	DIODE	PAGE
AM27C010-150DC	D-2	SN74HC04AN	D-23	2SA1162Y	D-33	10E-2	D-34
AM27C010-155DC	D-2	SN74HC04ANS	D-23	2SA1242	D-33	10E2N	D-34
AM27C256-150DC	D-2	SN74HC08ANS	D-23	2SA985A	D-33	1S2837	D-34
AM27C256-155DC	D-2	SN74HC125NS	D-23	2SB1040A	D-33	1SS119	D-34
CS5326-KP	D-3	SN74HC126NS	D-23	2SB906	D-33	BR3432S	D-34
CX20174	D-3	SN74HC138ANS	D-23	2SC2275A	D-33	EBG3432S	D-34
CX23065A	D-3	SN74HC14ANS	D-23	2SC2458	D-33	EBG5734S	D-34
CXA1046M	D-4	SN74HC161AN	D-24	2SC2712Y	D-33	ERA81-004	D-34
CXA1364R	D-4	SN74HC175ANS	D-24	2SC2855	D-33	ERC81-004	D-34
CXA1418N	D-5	SN74HC245ANS	D-24	2SD1020	D-33	FC52M	D-34
CXD1008Q	D-6	SN74HC32ANS	D-24	2SD1221	D-33	FC53M	D-34
CXD1009Q	D-7	SN74HC540ANS	D-24	2SD1266	D-33	GL-3HY8	D-34
CXD1052Q-Z	D-8	SN74HC541ANS	D-25	2SD773	D-33	HZ ? ? A ?	D-34
CXD1160AP	D-9	SN74HC573BNS	D-25	2SK170	D-33	HZS ? ? L	D-34
CXD8130Q	D-10	SN74HC574ANS	D-25	DTA114EK	D-33	PY3432S	D-34
CXD8139AQ	D-10	SN74HC74AN	D-25	DTA124ES	D-33	PY5734S	D-34
CXD8141Q	D-12	SN74HC74ANS	D-25	DTA143EK	D-33	RD ? ? EB ?	D-34
CXD8163AQ	D-12	SN74HC86ANS	D-19	DTA143TK	D-33	RD ? ? ESB ?	D-34
CXD8184AQ	D-14	SN74HCU04ANS	D-23	DTC124EK	D-33	RK14	D-34
CXD8185AQ	D-16	SN74LS03NS	D-25	DTC124ES	D-33	SLR-34PG5	D-34
CXD8319M	D-17	TC74HC123AF	D-25	DTC143TK	D-33	TLG124A	D-34
CXK58257AM-10LL	D-17	TC74HC4051AF	D-26	DTC143TS	D-33	TLR124	D-34
HD14053BFP	D-18	TC74HC4052AF	D-26	PS2604	D-33	TLUG164	D-34
LM358PS	D-18	TC74HC574F	D-25			TLUR164	D-34
LM393PS	D-18	TC74HC86AF	D-19			TLUY164	D-34
M5219L	D-18	TD62381P	D-26			TLY256	D-34
MB3763PF	D-18	TL431CPS	D-26				
MC14053BF	D-18	TL7705ACPS	D-26				
MC14066BF	D-18	TL7705CPS-B	D-26				
MC1648P	D-18	TLC272CPS	D-26				
MC34051P	D-19	TLC274CNS	D-26				
MC4044P	D-19	TMP82C79P-2	D-27				
MC74HC86AF	D-19	UPD43256AGU-10LL	D-28				
MSC62408	D-20	UPD4702G	D-28				
MSM6338MS-K	D-21	UPD70216L-10	D-29				
NE5532P	D-21	UPD71051GB-10-3B4	D-30				
PALCE16V8H-25PC	D-21	UPD71054GB-10-3B4	D-30				
PCM61P-S-2	D-21	UPD71059GB-10-3B4	D-31				
MS62256CLL-10FC	D-17	UPD78C11ACW-F08	D-32				
RC4556S	D-22						
RC7805FA	D-22						
RC7815FA	D-22						
RC7818FA	D-22						
RC78L05A	D-22						
RC7905FA	D-22						
RC7915FA	D-22						
RC7918FA	D-22						
SM5813APS	D-22						
SN74HC00AN	D-23						
SN74HC00ANS	D-23						

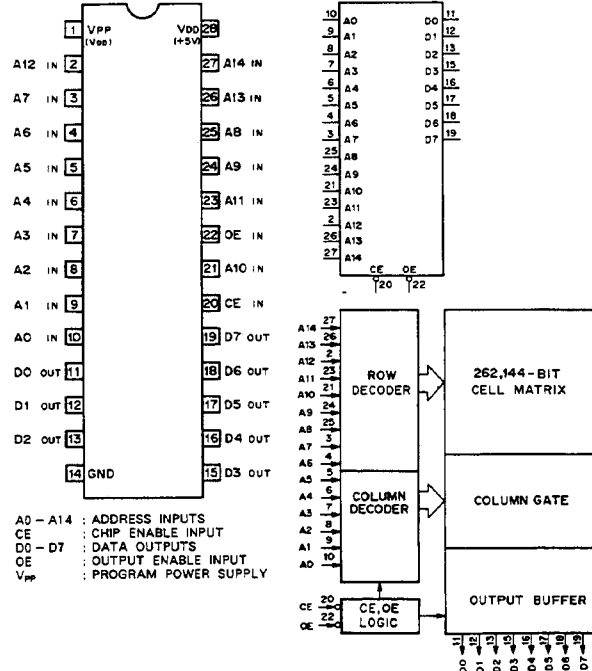
AM27C010-150DC (AMD)
AM27C010-155DC (AMD)

C-MOS 1M (131072x8)-BIT EPROM
- TOP VIEW -



AM27C256-150DC (AMD)
AM27C256-155DC (AMD)

C-MOS 256K (32Kx8)-BIT UV ERASABLE PROM WITH 3-STATE OUTPUTS
- TOP VIEW -



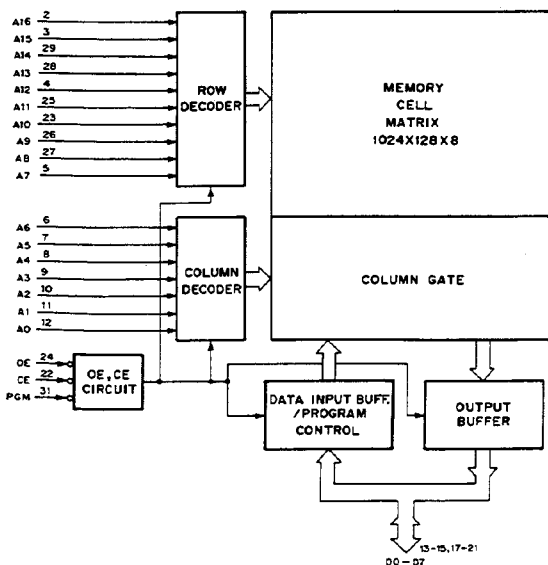
READ MODE (VDD=+5V, Vpp=+5V)

OE	CE	PGM	A0-A16	D0-D7	FUNCTION
0	0	1	A IN	D OUT	ACTIVE
X	1	X	X	HI-Z	STANDBY
1	0	X	A IN	OUTPUT	PROGRAM
X	0	0	A IN	HI-Z	DISABLE

0: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE
HI-Z: HIGH-IMPEDANCE

PROGRAM MODE (VDD=+6V, Vpp=+12.5V)

MODE	OE	CE	PGM	A0-A16	D0-D7	FUNCTION
1-BYTE PROGRAM	1	0	0	A IN	D IN	PROGRAM
PROGRAM	0	0	1	A IN	D OUT	VERIFY
MODE	1	0	1	A IN	HI-Z	PROGRAM INHIBIT
4-BYTE PROGRAM	1	1	1	A IN	D IN	PROGRAM DATA INPUT
PROGRAM	0	1	0	A0-A1, X A2-A16, A IN	HI-Z	PROGRAM
MODE	0	0	1	A IN	D OUT	VERIFY
	0	1	1	A IN	HI-Z	PROGRAM INHIBIT



An	CE	OE	VDD	Vpp	Dn	FUNCTION
An	0	0	+5V	+5V	D out	READ
An	0	1	+5V	+5V	HI-Z	OUTPUT DISABLE
X	1	X	+5V	+5V	HI-Z	STANDBY
An	0	1	+6V	+12.5V	D in	PGM
An	1	0	+6V	+12.5V	D out	PGM VERIFY(1)
An	0	0	+6V	+12.5V	D out	PGM VERIFY(2)
X	1	1	+6V	+12.5V	HI-Z	PGM INH
A0	0	0	+5V	+5V	DEVICE CODE	ELECTRONIC SIGNATURE*

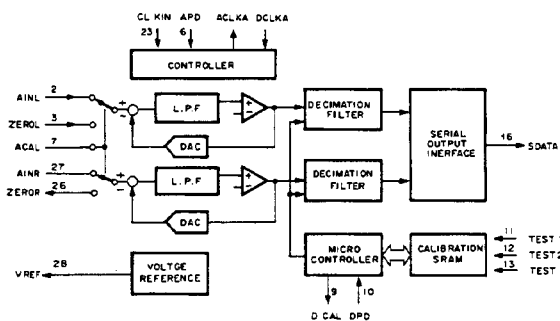
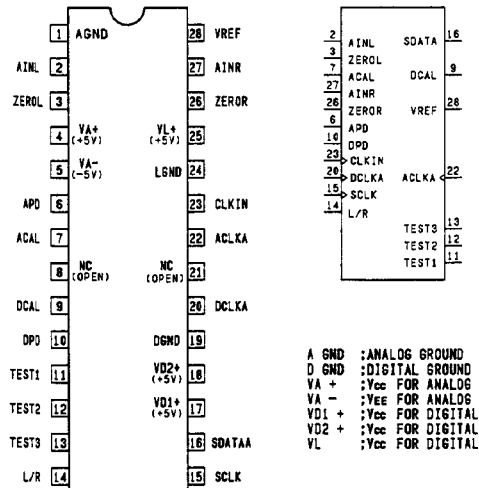
* SEE FOLLOWING DESCRIPTION.

ELECTRONIC SIGNATURE FOR P ROM WRITER

ADDRESS SETTINGS IN READ MODE			
A1-A8	A9	A10-A13	A14, Vpp
0	12V	0	1

	A0	CODE DATA								
		D7	D6	D5	D4	D3	D2	D1	D0	
MAKER CODE	0	0	0	0	0	0	1	0	0	04H
DEVICE CODE	1	0	1	1	0	0	0	1	0	62H

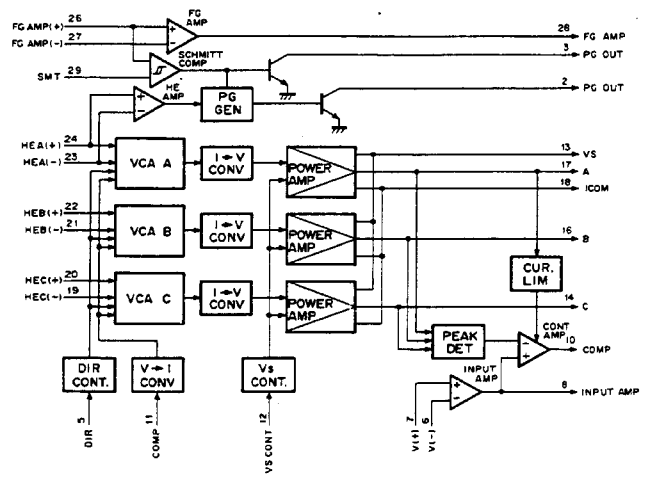
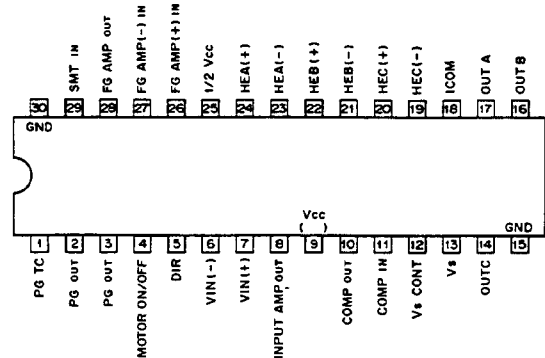
CS5326-KP (ASAHIKASEI)
16-BIT OVERSAMPLING STEREO A/D CONVERTER
- TOP VIEW -



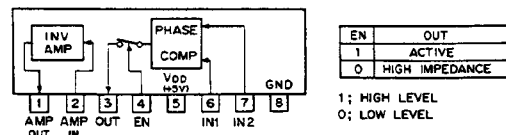
INPUT
ACAL : ANALOG CALIBRATION NORMALLY, CONNECT TO DCAL PIN.
AINL : L CHANNEL ANALOG INPUT
AINR : R CHANNEL ANALOG INPUT
APD : ANALOG POWER DOWN
(H = POWER DOWN MODE) NORMALLY, CONNECT TO DPD PIN.
CLKIN : MASTER CLOCK
DCLKA : DIGITAL SYSTEM CLOCK
CONNECT TO ACLKA PIN.
DPD : DIGITAL POWER DOWN (H = POWER DOWN MODE)
L/R : INPUT CHANNEL SELECTION
DATA CHANNEL OUTPUT FROM SOATA PIN IS SELECTED.
(H = L CHANNEL DATA, L = R CHANNEL DATA)
SCLK : SERIAL DATA OUTPUT CLOCK
TEST1~TEST3 : TEST (CONNECT TO DGND)
ZEROL : L CHANNEL ZERO LEVEL INPUT
ZEROR : R CHANNEL ZERO LEVEL INPUT

OUTPUT
ACLKA : ANALOG SYSTEM CLOCK (CONNECT TO DCLKA PIN.)
DCAL : DIGITAL CALIBRATION
SOATA : SERIAL DATA OUTPUT
DATA IS OUTPUT IN ORDER FROM MSB IN 2ND COMPLEMENT.
VREF : REFERENCE VOLTAGE SUPPLY OF -3.6V

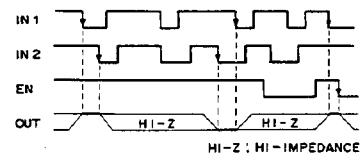
CX20174 (SONY)
THREE-PHASE LINEAR BSL MOTOR DRIVE
- TOP VIEW -



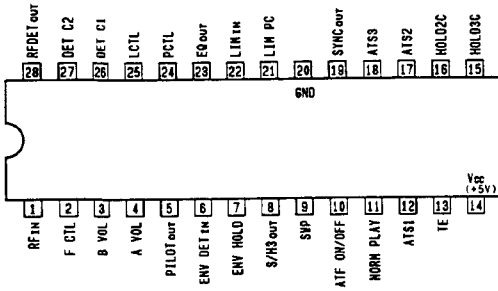
CX23065A (SONY)
N-MOS PHASE COMPARATOR WITH INVERSION AMPLIFIER
- PRINTED SIDE VIEW -



TIMING CHART



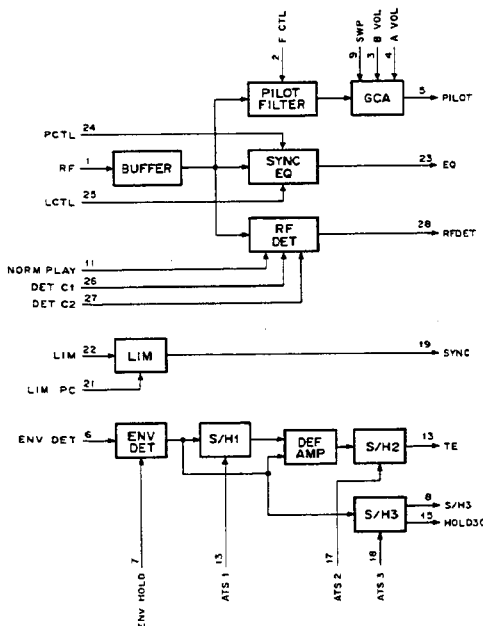
CXA1046M (SONY)

ATF FOR R-DAT
- TOP VIEW -

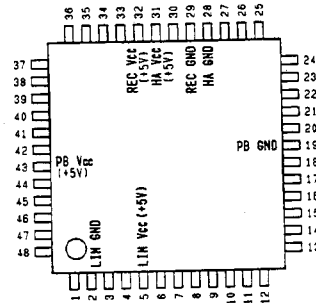
INPUT
A VOL : RESISTOR AND BY-PASS CAPACITOR CONNECTION FOR ADJUSTING ACH GAIN OF THE GAIN CONTROL AMPLIFIER
ATF ON/OFF : ATF BLOCK ON/OFF (L:ON)
ATSS-ATSS : SAMPLE PULSE INPUT FOR SAMPLE AND HOLD
ENV DET IN : ENVELOPE DETECTOR INPUT
LIM IN : LIMITER INPUT
LIM PC : BYPASS CAPACITOR FOR LIMITER BLOCK
NORM PLAY : DETERMINES IF NORMAL MODE(L:NORMAL MODE)
RF IN : RF INPUT
SVP : ACH/BCH SELECT CONTROL OF PROCESS SIGNAL (H:BCH,L:ACH)

OUTPUT
S OUT : ATF SYNC EQUALIZER OUTPUT
PILOT OUT : PILOT SIGNAL OUTPUT
RF DET OUT : RF DETECTOR OUTPUT
S/H 3 OUT : SAMPLE HOLD 3 OUTPUT
SYNC OUT : ATF SYNC OUTPUT
IE : TRACKING ERROR OUTPUT

OTHERS
B VOL : RESISTOR AND BY-PASS CAPACITOR CONNECTION FOR ADJUSTING BCH GAIN OF THE GAIN CONTROL AMPLIFIER
DET C1 : CAPACITOR CONNECTION FOR SMOOTHING FILTER TO DETERMINE THE RF DETECTOR THRESHOLD LEVEL
DET C2 : EXTERNAL CAPACITOR CONNECTION FOR RF ENVELOPE WAVEFORM ADJUSTMENT
ENV DET IN : ENVELOPE DETECTOR HOLD CAPACITOR CONNECTION
F CTL : EXTERNAL RESISTOR CONNECTION FOR DECIDING THE PILOT FILTER (L,P,F)
LCTL : EXTERNAL RESISTOR CONNECTION FOR DECIDING THE SYNC EQUALIZER LOW RANGE
PCTL : EXTERNAL RESISTOR CONNECTION FOR DECIDING THE SYNC EQUALIZER PHASE
HOLD2C : EXTERNAL HOLD CAPACITOR CONNECTION FOR SAMPLE AND HOLD 2
HOLDSC : EXTERNAL HOLD CAPACITOR CONNECTION FOR SAMPLE AND HOLD 3



CXA1364R (SONY)

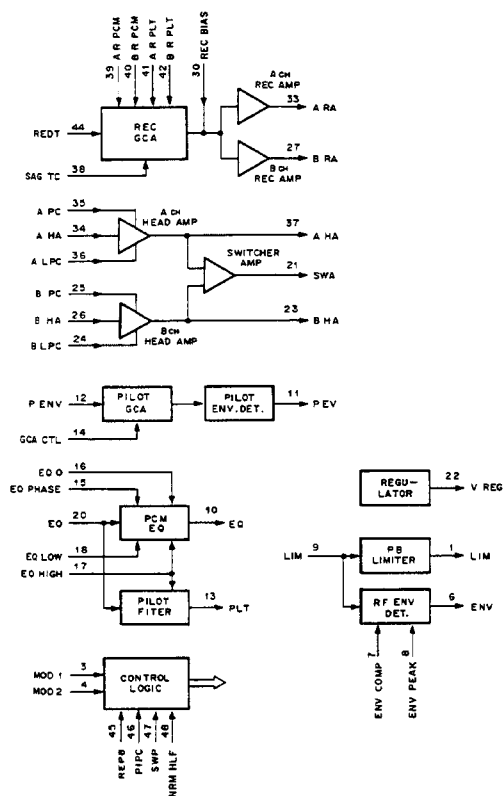
REC/PB AMP FOR R-DAT
- TOP VIEW -

PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	O	LIM OUT	13	O	PLT OUT	25	-	B PC	37	O	IA HA OUT
2	-	LIM GND	14	I	GCA CTL	26	I	B HA IN	38	-	SAG TC
3	I	MOD1 IN	15	-	EQ PHASE	27	O	B RA OUT	39	-	A R PCM
4	I	MOD2 IN	16	-	EQ Q	28	-	HA GND	40	-	B R PCM
5	-	LIM Vcc	17	-	EQ HIGH	29	-	REC GND	41	-	A R FLT
6	O	ENV OUT	18	-	EQ LOW	30	I	REC BIAS	42	-	B R FLT
7	-	ENV COMP	19	-	PB GND	31	-	HA Vcc	43	-	PB Vcc
8	-	ENV PEAK	20	I	EQ IN	32	-	REC Vcc	44	I	REDT IN
9	I	LIM IN	21	O	SWA OUT	33	O	A RA OUT	45	I	REPB IN
10	O	EQ OUT	22	O	V REG	34	I	A HA IN	46	I	PIPC IN
11	O	P EV OUT	23	O	B HA OUT	35	-	A PC	47	I	SWP IN
12	I	F ENV IN	24	-	B LPC	36	-	A LPC	48	I	NRM HLF

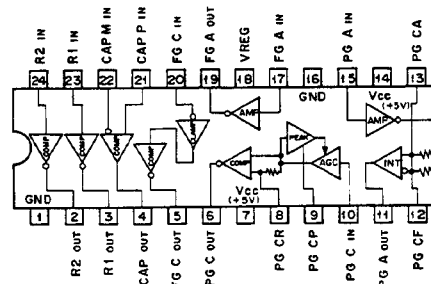
INPUT
A HA IN : Ach HEAD AMPLIFIER INPUT
B HA IN : Bch HEAD AMPLIFIER INPUT
EQ IN : PCM EQ INPUT
GCA CTL : PILOT GCA GAIN CONTROL VOLTAGE INPUT
LIM IN : PB LIMITER AND RF ENVELOPE DETECTOR INPUT
MOD1 IN, MOD2 IN : OPERATION MODE SWITCHING LOGIC INPUT
NRM HLF : NORMAL/HALF SPEED SWITCHING SIGNAL INPUT
P ENV IN : PILOT GCA INPUT
PIPC IN : PCM/PILOT REC AREA SWITCHING SIGNAL INPUT
REC BIAS : REC FINAL STAGE CURRENT AMPLIFIER INPUT
REDT IN : REC SIGNAL INPUT
REPB IN : REC/PB SWITCHING SIGNAL INPUT
SWP IN : A/B SWITCHING SIGNAL INPUT

OUTPUT
A HA OUT : Ach HEAD AMPLIFIER OUTPUT
A RA OUT : Ach REC AMPLIFIER OUTPUT
B HA OUT : Bch HEAD AMPLIFIER OUTPUT
B RA OUT : Bch REC AMPLIFIER OUTPUT
ENV OUT : RF ENVELOPE DETECTOR OUTPUT
EQ OUT : PCM EQUALIZER OUTPUT
LIM OUT : PB LIMITER OUTPUT
P EV OUT : PILOT ENVELOPE OUTPUT
PLT OUT : PILOT FILTER OUTPUT
SWA OUT : SWITCH AMPLIFIER OUTPUT
V REG : REGULATOR OUTPUT

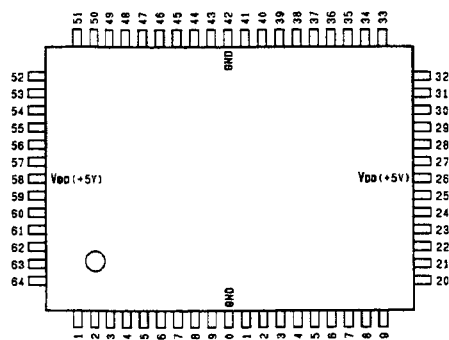
OTHERS
A LPC : CONNECTION PIN FOR SMOOTHING CAPACITOR OF Ach HEAD AMPLIFIER DC SERVO
A PC : CONNECTION PIN FOR EMITTER BYPASS CAPACITOR OF Ach HEAD AMPLIFIER FIRST STAGE GROUNDED EMITTER TRANSISTOR
A R PCM : CONNECTION PIN FOR RESISTOR DETERMINING Ach REC CURRENT
A R PLT : CONNECTION PIN FOR RESISTOR DETERMINING, ALONG WITH RESISTOR OF PIN 39, Ach PILOT SIGNAL REC CURRENT
B LPC : CONNECTION PIN FOR DC SMOOTHING CAPACITOR OF Bch HEAD AMPLIFIER DC SERVO
B PC : CONNECTION PIN FOR EMITTER BYPASS CAPACITOR OF Bch HEAD AMPLIFIER FIRST STAGE GROUNDED EMITTER TRANSISTOR
B R PCM : CONNECTION PIN FOR RESISTOR DETERMINING Bch REC CURRENT
B R PLT : CONNECTION PIN FOR RESISTOR DETERMINING, ALONG WITH RESISTOR OF PIN 40, Bch PILOT SIGNAL REC CURRENT
ENV COMP : FOR CONTROLLING RF ENVELOPE THRESHOLD VOLTAGE
ENV PEAK : CONNECTION PIN OF THE CAPACITOR FOR RF PEAK HOLD
EQ HIGH : RESISTOR OR CURRENT SOURCE IS CONNECTED FOR DETERMINING PCM EQ HIGH BAND PEAK FREQUENCY AND PILOT FILTER CUT OFF FREQUENCY
EQ LOW : RESISTOR OR CURRENT SOURCE IS CONNECTED FOR DETERMINING PCM EQ LOW BAND CHARACTERISTIC
EQ PHASE : RESISTOR OR CURRENT SOURCE IS CONNECTED FOR DETERMINING PCM EQ PHASE CHARACTERISTIC
EQ Q : RESISTOR OR CURRENT SOURCE IS CONNECTED FOR DETERMINING PCM EQ HIGH BAND PEAK GAIN
SAG TC : CONNECTION PIN FOR CAPACITOR CORRECTING THE REC WAVEFORM SAG



CXA1418N (SONY)
SENSOR AMPLIFIER FOR R-DAT
- TOP VIEW -



CXD1008Q (SONY)

C-MOS R-DAT SIGNAL PROCESSING (ERROR CORRECTION)
- TOP VIEW -

PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	I	RST	17	I/O	LR03	33	I/O	CTL1	49	O	A2
2	I	TST1	18	I/O	DFCK	34	I/O	EXCK	50	O	A1
3	O	PHCO	19	I/O	DIOC	35	I/O	STAT	51	O	A0
4	I	TST2	20	O	DADT	36	I/O	SBSY	52	O	PRGE
5	I	DALF	21	O	ERRF	37	I/O	SRVS	53	O	PTRD
6	I/O	VCOI	22	I	ADDT	38	I	ADAE	54	O	RW
7	I	ADLF	23	I/O	XBCK	39	I/O	FLGC	55	I	DOE
8	I	XT21	24	I/O	BCK	40	I	CKRS	56	I/O	D7
9	O	XT20	25	I/O	WCK	41	I	CLKI	57	I/O	D6
10	-	GND	26	-	VDD	42	-	GND	58	-	VDD
11	I	XT31	27	I/O	LRCK	43	I	PREN	59	I/O	D5
12	O	XT30	28	I	FSEN	44	I/O	RCPB	60	I/O	D4
13	I	AUDR	29	I	MUTG	45	I/O	PRGS	61	I/O	D3
14	I/O	MNTG	30	I/O	PIDN	46	I/O	CIC2	62	I/O	D2
15	I/O	LR01	31	I/O	PIUP	47	O	A4	63	I/O	D1
16	I/O	LR02	32	I/O	CTL2	48	O	A3	64	I/O	D0

INPUT

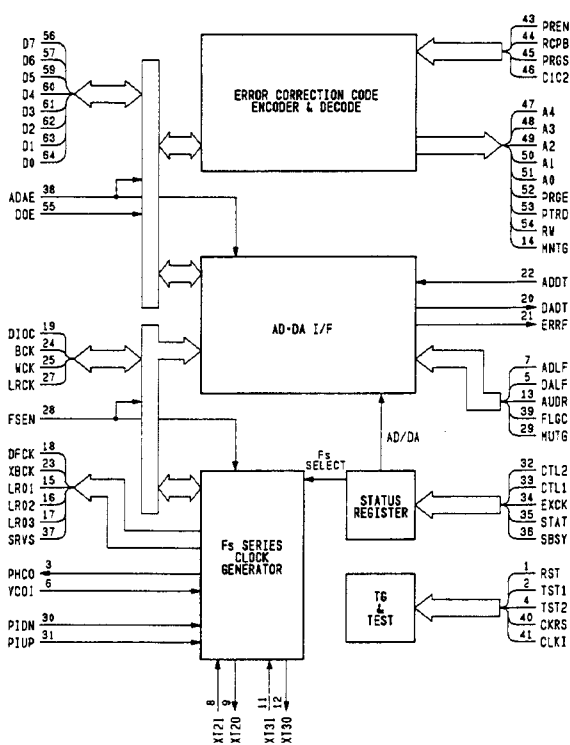
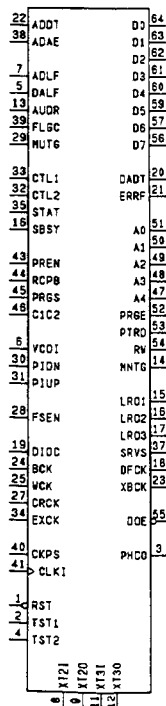
ADAE : INDICATES THAT DATA BUS IS OCCUPIED BY AD AND DA.
 ADAT : AD DATA (REC DATA) INPUT
 ADLF : SELECTS LSB FIRST OR MSB FIRST OF AD DATA INPUT. ('H':LSB FIRST)
 AUDR : SELECTS WHETHER THE PLAYBACK DATA IS AUDIO DATA. ('H':AUDIO DATA)
 CIC2 : SELECTS C1 CODE/C2 CODE OF ECC. ('H':C1)
 CKRS : MASTER CLOCK RESET SIGNAL
 CLKI : MASTER CLOCK (18.432 MHz)
 CTL1 : STATUS DATA SHIFT IN ENABLE SIGNAL
 CTL2 : SELECTS LSB FIRST OR MSB FIRST OF DA DATA OUTPUT. ('H':LSB FIRST)
 DAE : STATUS SHIFT IN CLOCK
 EXCK : CONTROLS FORCIBLY ERROR FLAG, ERASURE CORRECTION PROHIBIT AND MUTING BY TIME SHARING.
 FSEN : SPECIFIES OUTPUT OR NOT OF DFCK, DIOC, BCK, WCK AND LRCK. 'H':OUTPUT
 MUTG : MUTING CONTROL SIGNAL INPUT. 'H':MUTE ON
 PIDN : PITCH DOWN CONTROL
 PIUP : PITCH UP CONTROL
 PREN : ECC DATA INPUT/OUTPUT REQUEST INHIBIT SIGNAL.
 PRGS : ECC PROGRAM START
 RCPB : SELECTS REC MODE/PB OF ECC. ('H':REC MODE)
 SBSY : STATUS LOAD CLOCK
 STAT : STATUS SHIFT IN DATA INPUT
 TST1 : TEST PIN, NORMALLY FIXED TO 'L'.
 TST2 : TEST PIN, NORMALLY FIXED TO 'L'.
 VCOI : VCO INPUT.
 DOE : READ/WRITE SWITCHING OUTPUT ENABLE SIGNAL. 'L':OUTPUT.
 RST : RESET SIGNAL 'L':RESET.
 XT21 : CRYSTAL INPUT (22.5792 MHz).
 XT31 : CRYSTAL INPUT (24.576 MHz).

OUTPUT

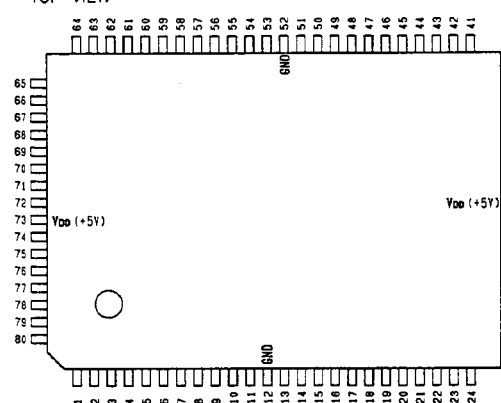
A0-A4 : ECC DATA ADDRESS (A0 TO A4 INDICATES CODE LOCATION)
 DADT : DA DATA (PLAYBACK DATA OR REC MONITOR DATA) OUTPUT
 DFCK : 256 fs OUTPUT. FSEN='H':OUTPUT. (TRISTATE)
 ERRF : DA DATA ERROR FLAG OUTPUT. ('H':ERROR)
 LR01 : 15 BCK DELAYED SIGNAL OF LRCK
 LR02 : 15 BCK DELAYED SIGNAL OF LRCK
 LR03 : 'H' AND 'L' INVERSION SIGNAL OF LR02
 MNTG : 'H' INDICATES THAT ERROR MONITOR BEING OUTPUT TO D7 TO D0
 PHCO : PHASE COMPARISON OUTPUT FOR VARIABLE PITCH (TRISTATE)
 PRGE : ECC DATA ADDRESS (INVERSION EACH ONE CODE PROCESSING)
 PTRD : ERROR POINTER/CODE DATA SWITCHING. 'H':POINTER IS R/V.
 RW : READ/WRITE SWITCHING. ('H':READ)
 SRVS : SERVO REFERENCE SIGNAL (12.8 kHz)
 XBCK : 'H' AND 'L' INVERSION SIGNAL OF BCK
 XT20 : CRYSTAL OUTPUT
 XT30 : CRYSTAL OUTPUT

INPUT/OUTPUT

BCK : 64fs INPUT/OUTPUT. FSEN='H':OUTPUT
 D0-D7 : DATA BUS INPUT/OUTPUT. (D7=MSB, D0=LSB)
 DIOC : 128fs INPUT/OUTPUT. FSEN='H':OUTPUT
 LRCK : 1fs INPUT/OUTPUT. FSEN='H':OUTPUT
 WCK : 2fs INPUT/OUTPUT. FSEN='H':OUTPUT

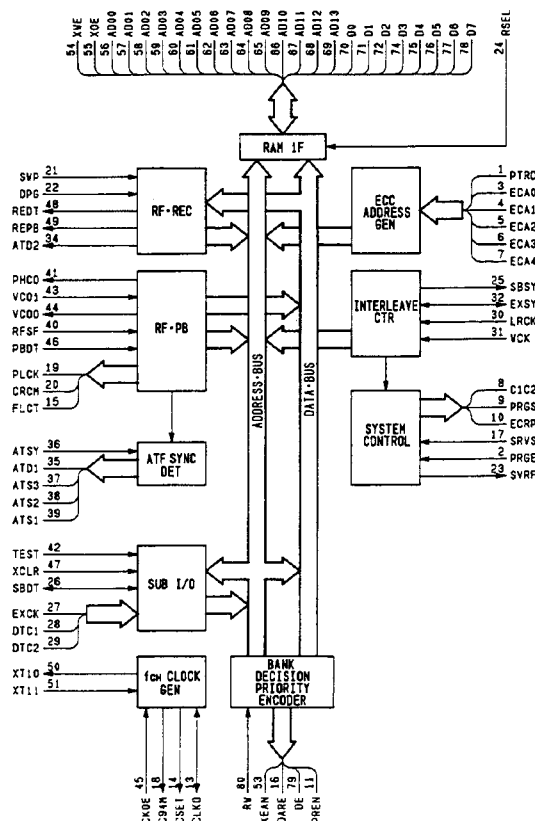
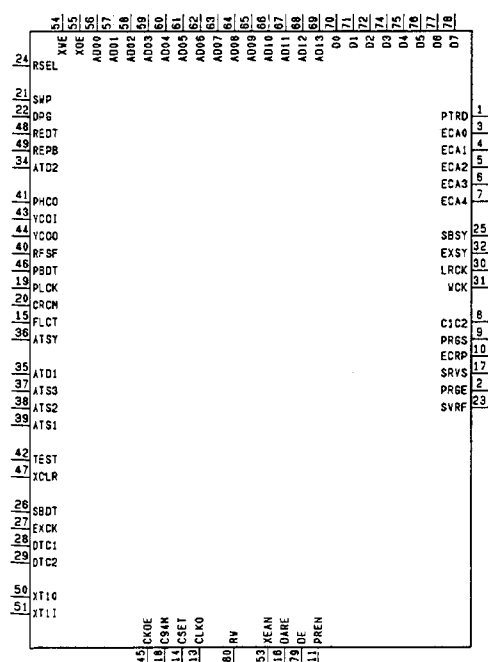


CXD1009Q (SONY)

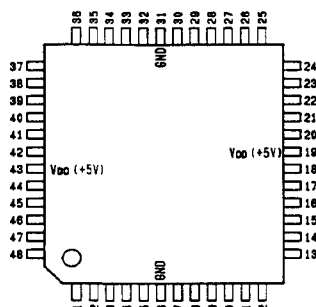
CMOS SIGNAL PROCESSING (RAM CONTROL) FOR R-DAT
- TOP VIEW -

PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	I	PTRD	21	I	SWP	41	O	PHCO	61	I/O	AD05
2	I	PRGE	22	I	DPG	42	I	TEST	62	I/O	AD06
3	I	ECA0	23	O	SVRF	43	I	VCOI	63	I/O	AD07
4	I	ECA1	24	I	RSEL	44	O	VCOO	64	I/O	AD08
5	I	ECA2	25	O	SBSY	45	I	CKOE	65	I/O	AD09
6	I	ECA3	26	I/O	SBDT	46	I	PBDT	66	O	AD10
7	I	ECA4	27	I	EXCK	47	I	YCLR	67	O	AD11
8	O	C1C2	28	I	DTC1	48	O	REDT	68	O	AD12
9	O	PRGS	29	I	DTC2	49	O	REPB	69	O	AD13
10	O	ECRP	30	I	LRCK	50	O	XTIO	70	I/O	D0
11	O	PREN	31	I	WCK	51	I	XTII	71	I/O	D1
12	-	GND	32	I/O	EXSY	52	-	GND	72	I/O	D2
13	I/O	CLKO	33	-	VDD	53	O	XEAN	73	-	VDD
14	O	CSET	34	O	ATD2	54	O	XWE	74	I/O	D3
15	O	FLCT	35	O	ATD1	55	O	XOE	75	I/O	D4
16	O	DARE	36	I	ATSY	56	I/O	AD00	76	I/O	D5
17	I	SRVS	37	O	ATS3	57	I/O	AD01	77	I/O	D6
18	O	C94M	38	O	ATS2	58	I/O	AD02	78	I/O	D7
19	O	PLCK	39	O	ATS1	59	I/O	AD03	79	O	DE
20	O	CRCM	40	I	RFSF	60	I/O	AD04	80	I	RW

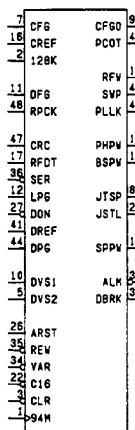
INPUT	DATA SIGNAL AFTER ATF EQ
ATSY	CLKO PIN I/O CONTROL (Fch CLOCK INPUT/OUTPUT SWITCHING)
CKOE	(L: Fch CLOCK OUT, H: Fch CLOCK EXTERNAL INPUT)
DPG	PG SIGNAL INPUT PIN (REFERENCE = FALLING EDGE)
DTC1 - DTC2	SBDT MODE DESIGNATION SIGNAL
ECA0 - ECA4	ECC LOCATION ADDRESS (ECA0 = LSB, ECA4 = MSB)
EXCK	SBDT INPUT/OUTPUT CLOCK
LRCK	Lch/Rch DISCRIMINATION SIGNAL OF AD/DA DATA (SAME FREQUENCY CLOCK AS FS) (Lch: L, Rch: H)
PBDT	RF PLAYBACK SIGNAL
PRGE	ECC PROGRAM END SIGNAL
PTRD	POINTER READ SIGNAL
RFSF	RF ENVELOPE DETECT SIGNAL
RSEL	RAM SELECT PIN (SRAM: L, DRAM: H)
RW	ECC DATA READ/WRITE DISCRIMINATION SIGNAL (READ: H, WRITE: L)
SRVS	DRUM FG REFERENCE SIGNAL (128K)
SWP	TRACK DISCRIMINATION OF +AZIMUTH AND -AZIMUTH (+AZIMUTH: L - AZIMUTH: H)
TEST	LSI TEST PIN (NORMAL: L, TEST: H)
VCOI	VCO INPUT PIN
WCK	1 WORD (= 16 bit) DISCRIMINATION REFERENCE SIGNAL (2 x FS) OF AD/DA DATA
XCLR	LSI TEST PIN (NORMALLY FIXED TO H.)
XT11	CRYSTAL CONNECTION PIN
OUTPUT	
ATD1	OFF TRACK DETECTION SIGNAL (WHEN PB: OFF: H, ON: L, WHEN REC: FIXED TO L)
ATD2	DISCRIMINATION SIGNAL OF ATF PILOT SIGNAL (130kHz) (WHEN ALL REC (130kHz): H, WHEN OTHER THAN ALL REC: FIXED TO L)
ATS1 - ATS3	ATF PILOT SIGNAL DETECTION SAMPLING PULSE (WHEN PB: SAMPLING: H, HOLD: L, WHEN REC: FIXED TO L)
C1C2	C1/C2 DISCRIMINATION SIGNAL (C1: H, C2: L)
C94M	9.408MHz CRYSTAL CLOCK
CRCM	CRG DETECTION RESULT (OK: H, NG: L)
CSET	Fch/SYSTEM CLOCK (4.704MHz) SYNCHRONIZATION RESET SIGNAL
DARE	INDICATES THAT AD/DA SYSTEM HAS PRIORITY TO USE OF THE DATA BUS.
DE	08 DATA OUTPUT SYNC ENABLE SIGNAL
ECRP	ECC ENCODE/DECODE SWITCHING SIGNAL (ENCODE: H, DECODE: L)
FLCT	DISCRIMINATION SIGNAL (TIME DIVISION) FOR FORCED INTERPOLATION, C2 ERASURE FORBID, 0 CROSS MUTE, etc.
PHCO	PHASE COMPARATOR OUTPUT PIN
PLCK	PLL CLOCK EXTRACTED FROM PBDT SIGNAL
PREN	ECC RAM ACCESS ENABLE SIGNAL
PRGS	ECC PROGRAM START SIGNAL
REDT	RF REC SIGNAL
REPB	REC/PB SWITCHING SIGNAL OF RF AMPLIFIER (REC: H, PB: L)
SBSY	SUBCODE DATA I/O TIMING REFERENCE SIGNAL (OTHER THAN SEARCH = DUTY 50)
SVRF	DRUM SERVO REFERENCE SIGNAL (100/3Hz) (DUTY 50)
VCOO	VCO OUTPUT PIN
XEAN	EXTERNAL RAM ACCESS TIMING SIGNAL
XOE	RAM OUTPUT ENABLE SIGNAL
XTIO	CRYSTAL CONNECTION PIN
XWE	RAM WRITE ENABLE SIGNAL
INPUT/OUTPUT	
AD00 - AD13	ADDRESS BUS (AD0 = LSB, AD13 = MSB)
CLKO	Fch CLOCK (18.816MHz)
D0 - D7	DATA BUS (D0 = LSB, D7 = MSB)
EXSY	EXTERNAL SYSTEM SYNC SIGNAL (DUTY 50)
SBDT	SERIAL I/O PORT FOR SUBCODE DATA, STATUS INFORMATION, etc.



CXD1052Q-Z (SONY)

C-MOS SERVO CONTROL FOR R-DAT
- TOP VIEW -

PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL
1	I	94M	13	O	SPPW	25	I	TIM1	37	O	DBRK
2	I	128K	14	O	PHPW	26	I	ARST	38	O	TOU1
3	I	CLR	15	O	BSPP	27	I	DON	39	O	TOU2
4	O	PCDT	16	O	CREF	28	I	TIM3	40	I	TIM5
5	I	DYS2	17	I	RFDT	29	O	TOU3	41	I	DREF
6	-	GND	18	O	RFV	30	O	TOU4	42	I	TST2
7	I	CFG	19	-	VDD	31	-	GND	43	-	VDD
8	O	JTSP	20	I	TST1	32	I/O	TIO2	44	I	DPG
9	O	CFG0	21	I/O	TIO1	33	O	ALM	45	O	SPP
10	I	DYS1	22	I	C16	34	I	VAR	46	O	PLLK
11	I	DFG	23	O	JSTL	35	I	REV	47	I	CRC
12	I	LP6	24	I	TINA	36	I	SER	48	I	RPCK



INPUT

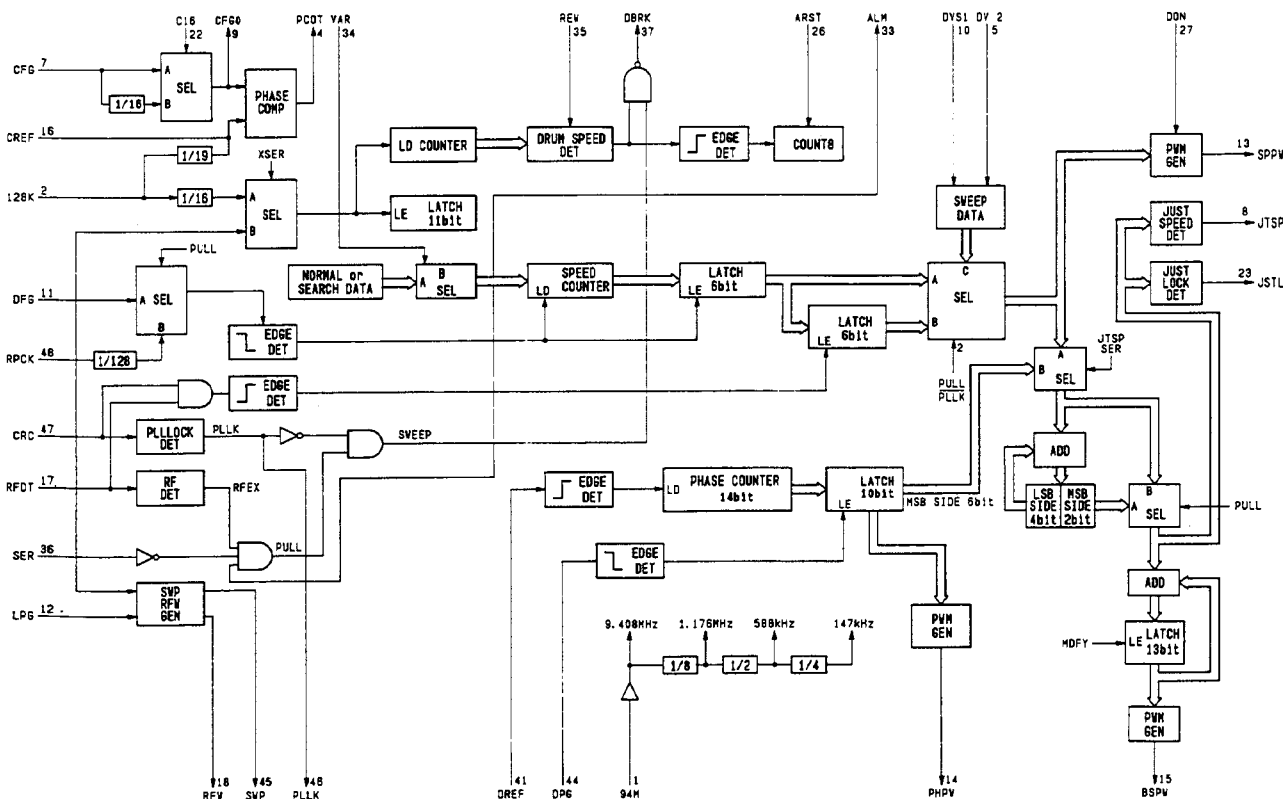
128K : SERVO REFERENCE INPUT (12.8kHz)
 94M : MASTER CLOCK INPUT (9.408MHz)
 ARST : ALARM RELEASE INPUT AT SEARCH (RELEASE WHEN L)
 CT6 : CAPSTAN MODE SWITCHING (x16 MODE WHEN L)
 C16 : CAPSTAN FREQUENCY GENERATOR INPUT
 CLR : RESET INPUT (RESET WHEN L)
 CRC : CYCLIC REDUNDANCY CHECK SIGNAL INPUT (CRC OK WHEN H)
 DFG : DRUM FREQUENCY GENERATOR INPUT
 DON : DRUM ON/OFF SWITCHING INPUT (ON WHEN L)
 DPG : DELAY PG INPUT
 DREF : DRUM PG REFERENCE INPUT
 DVS1 : SETS VOLTAGE GIVEN TO DRUM MOTOR DURING SERVO LOCK-IN IN SEARCH MODE
 DVS2 : SET VOLTAGE GIVEN TO DRUM MOTOR DURING SERVO LOCK-IN IN SEARCH MODE
 LPG : DRUM PHASE GENERATOR INPUT
 REW : FAST FORWARD, REWIND SETTING (REWIND WHEN L)
 RFDT : RF SIGNAL INPUT
 RPCK : REFERENCE INPUT AT SEARCH
 SER : SEARCH MODE SETTING (SEARCH WHEN L)
 TIM1 - TIM5 : TEST INPUT (NORMALLY FIXED TO L)
 TST1, TST2 : TEST INPUT (NORMALLY FIXED TO L)
 VAR : EXTERNAL REFERENCE SETTING PIN OF PIN No.2 (NORMALLY FIXED TO H)

OUTPUT

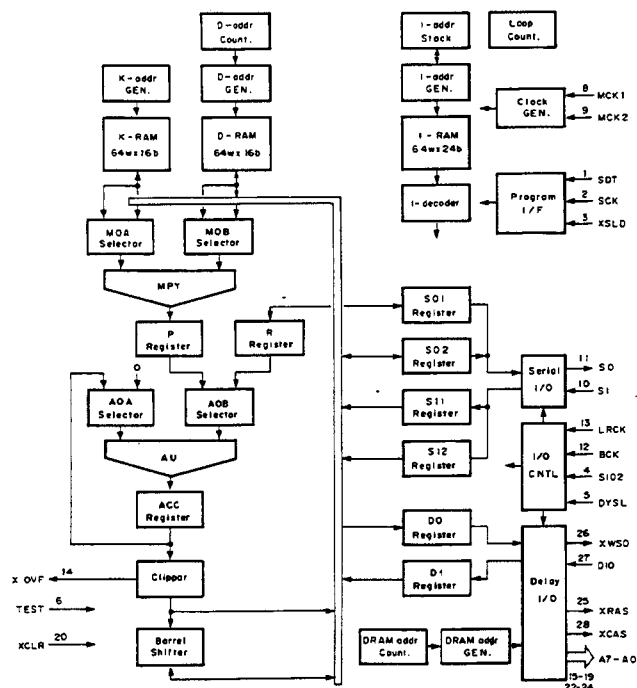
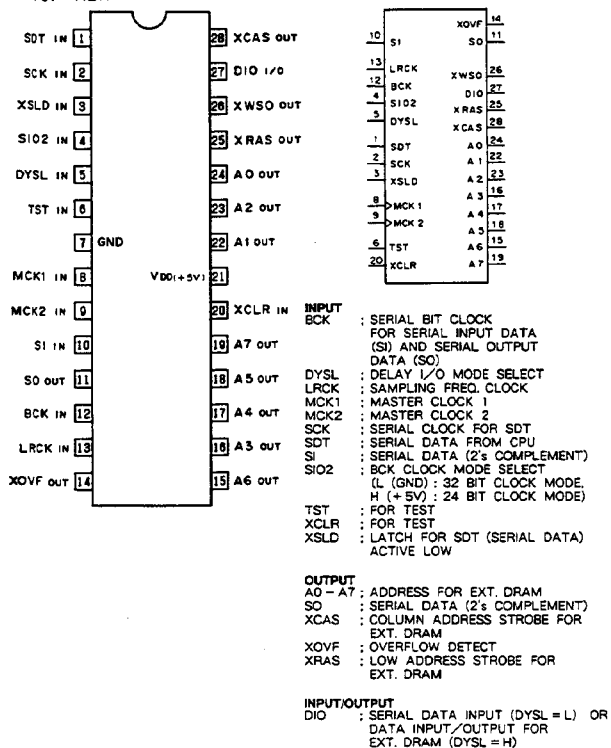
ALM : ALARM OUTPUT AT SEARCH (ALARM CONDITION WHEN L)
 BSPW : BIAS SERVO PWM OUTPUT
 CFG0 : CAPSTAN FREQUENCY GENERATOR OUTPUT
 CREF : CAPSTAN FREQUENCY REFERENCE OUTPUT
 DBRK : DRUM BRAKE OUTPUT (BRAKE ON WHEN H)
 JSTL : JUST LOCK MONITOR (JUST WHEN H)
 JTSP : JUST SPEED MONITOR OUTPUT (JUST SPEED WHEN H)
 PCOT : CAPSTAN PHASE COMPARATOR OUTPUT (TRI-STATE OUTPUT)
 PHPW : PHASE SERVO PWM OUTPUT
 PLLK : DRUM LOCK MONITOR OUTPUT (AT SEARCH LOCK WHEN H)
 RFV : RF WINDOW OUTPUT (RF SPECIFIED AREA WHEN L)
 SPPW : SPEED SERVO PWM OUTPUT
 SWP : SWITCHING PULSE OUTPUT
 TOU1 - TOU4 : TEST OUTPUT

INPUT/OUTPUT

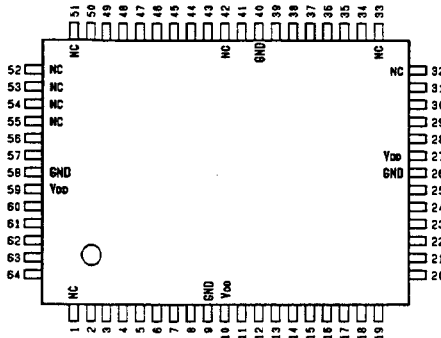
TIO1, TIO2 : TEST INPUT/OUTPUT (NORMALLY FIXED TO L)



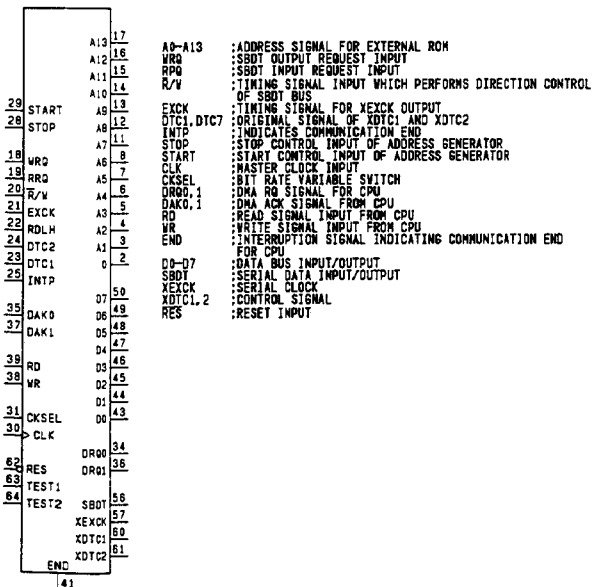
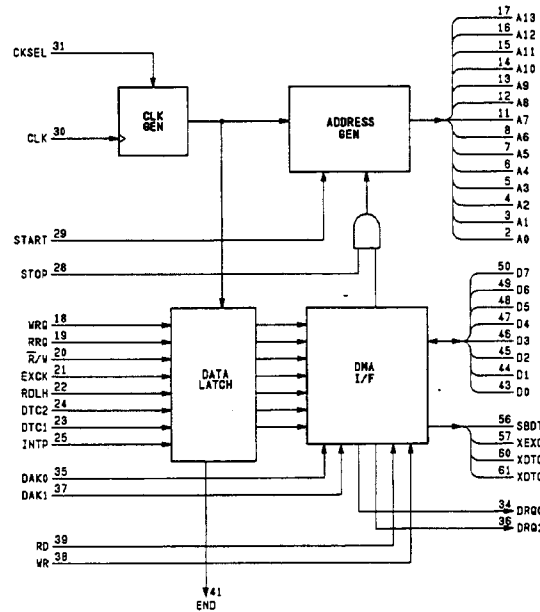
CXD1160AP (SONY)

CMOS DIGITAL AUDIO SIGNAL PROCESSOR
- TOP VIEW -

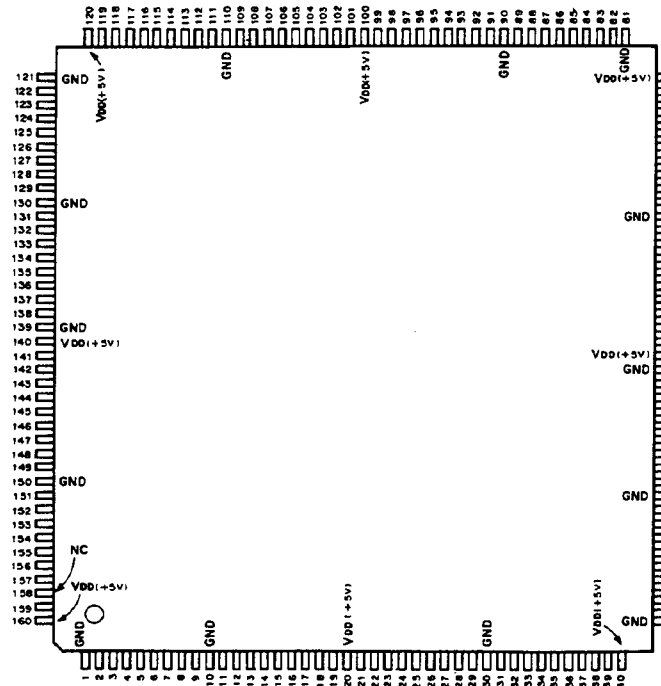
CXD8130Q (SONY)

C-MOS DMA SERIAL INTERFACE
- TOP VIEW -(V_{DD} = +5V)

PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	-	NC	17	O	A13	33	-	NC	49	I/O	D6
2	O	A0	18	I	WRQ	34	O	DRQ0	50	I/O	D7
3	O	A1	19	I	RRQ	35	I	DAK0	51	-	NC
4	O	A2	20	I	R/W	36	O	DRQ1	52	-	NC
5	O	A3	21	I	EXCK	37	I	DAK1	53	-	NC
6	O	A4	22	I	RDLH	38	I	WR	54	-	NC
7	O	A5	23	I	DTC1	39	I	RD	55	-	NC
8	O	A6	24	I	DTC2	40	-	GND	56	O	SBOT
9	-	GND	25	I	INTP	41	O	END	57	O	XEXCK
10	-	VDD	26	-	GND	42	-	NC	58	-	GND
11	O	A7	27	-	VDD	43	I/O	D0	59	-	VCC
12	O	A8	28	I	STOP	44	I/O	D1	60	O	XDTC1
13	O	A9	29	I	START	45	I/O	D2	61	O	XDTC2
14	O	A10	30	I	CLK	46	I/O	D3	62	I	RES
15	O	A11	31	I	CKSEL	47	I/O	D4	63	I	TEST1
16	O	A12	32	-	NC	48	I/O	D5	64	I	TEST2



CXD8139AQ (SONY) FLAT PACKAGE

C-MOS PERIPHERAL INTERFACE UNIT
- TOP VIEW -

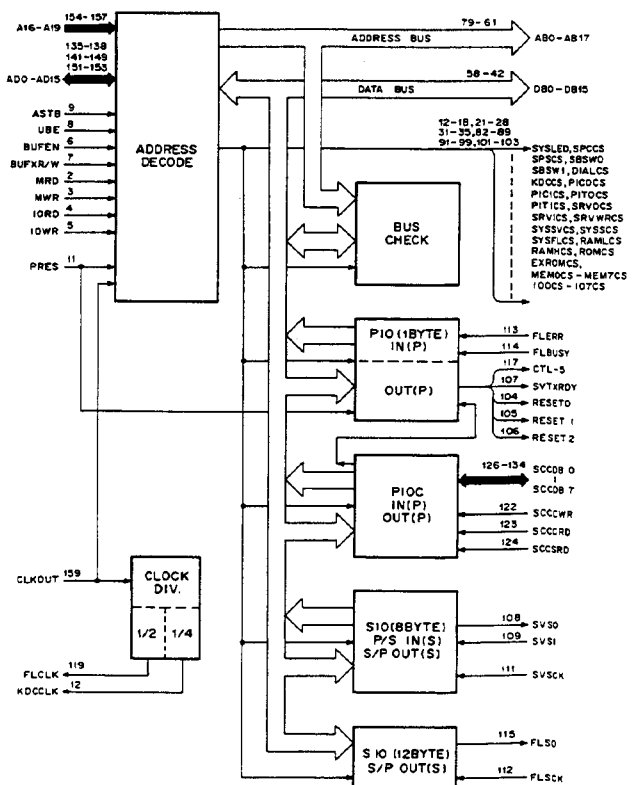
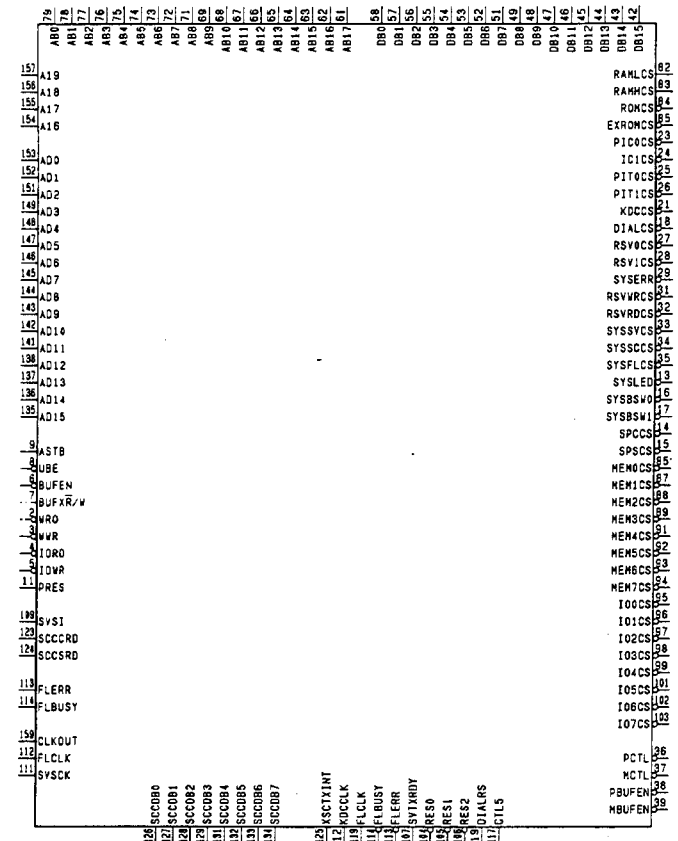
(V_{DD} = +5V)

PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	—	GND	41	—	GND	81	—	GND	121	—	GND
2	I	XMRD	42	I/O	DB15	82	O	RAMLCS	122	I	XSCCWR
3	I	XMRW	43	I/O	DB14	83	O	RAMHCS	123	I	XSCCRD
4	I	XIORD	44	I/O	DB13	84	O	XROMCS	124	I	XSCCSR
5	I	XIOWR	45	I/O	DB12	85	O	XEXROMCS	125	O	XSCTXINT
6	I	XBUFEN	46	I/O	DB11	86	O	XMEM0CS	126	I/O	SCCDB0
7	I	BUFEXRW	47	I/O	DB10	87	O	XMEM1CS	127	I/O	SCCDB1
8	I	XUBE	48	I/O	DB09	88	O	XMEM2CS	128	I/O	SCCDB2
9	I	ASTB	49	I/O	DB08	89	O	XMEM3CS	129	I/O	SCCDB3
10	—	GND	50	—	GND	90	—	GND	130	—	GND
11	I	XPRES	51	I/O	DB07	91	O	XMEM4CS	131	I/O	SCCDB4
12	O	KDCCLK	52	I/O	DB06	92	O	XMEM5CS	132	I/O	SCCDB5
13	O	XSYSLED	53	I/O	DB05	93	O	XMEM6CS	133	I/O	SCCDB6
14	O	XSPCCS	54	I/O	DB04	94	O	XMEM7CS	134	I/O	SCCDB7
15	O	XSPSCS	55	I/O	DB03	95	O	XIO0CS	135	I/O	AD00
16	O	XSSW0	56	I/O	DB02	96	O	XIO1CS	136	I/O	AD01
17	O	XSSW1	57	I/O	DB01	97	O	XIO2CS	137	I/O	AD02
18	O	XDIALCS	58	I/O	DB00	98	O	XIO3CS	138	I/O	AD03
19	O	DIALRES	59	—	GND	99	O	XIO4CS	139	—	GND
20	—	V _{DD}	60	—	V _{DD}	100	—	V _{DD}	140	—	V _{DD}
21	O	XKDCCS	61	O	AB17	101	O	XIO5CS	141	I/O	AD04
22	O	XSCUCS	62	O	AB16	102	O	XIO6CS	142	I/O	AD05
23	O	XPIC0CS	63	O	AB15	103	O	XIO7CS	143	I/O	AD06
24	O	XPIC1CS	64	O	AB14	104	O	XRESET0	144	I/O	AD07
25	O	XPIC2CS	65	O	AB13	105	O	XRESET1	145	I/O	AD08
26	O	XPIC3CS	66	O	AB12	106	O	XRESET2	146	I/O	AD09
27	O	XSRV0CS	67	O	AB11	107	O	SVTXRDY	147	I/O	AD10
28	O	XSRV1CS	68	O	AB10	108	O	SVS0	148	I/O	AD11
29	O	XSYSERR	69	O	AB09	109	I	SVSI	149	I/O	AD12
30	—	GND	70	—	GND	110	—	GND	150	—	GND
31	O	XSRVWRCS	71	O	AB08	111	I	XSVSCK	151	I/O	AD13
32	O	XSRVRDCS	72	O	AB07	112	I	XFLSCK	152	I/O	AD14
33	O	XSYSVCS	73	O	AB06	113	I	XFLERR	153	I/O	AD15
34	O	XSYS0CS	74	O	AB05	114	I	XFLBUSY	154	I	A16
35	O	XSYSFLCS	75	O	AB04	115	O	FLS0	155	I	A17
36	O	XPCTL	76	O	AB03	116	O	XFLTXINT	156	I	A18
37	O	XMCTL	77	O	AB02	117	O	CTL-5	157	I	A19
38	O	XPBUFEN	78	O	AB01	118	I	STS-4	158	—	NC
39	O	XMBUFEN	79	O	AB00	119	O	FLCLK	159	I	CLKOUT
40	—	V _{DD}	80	—	V _{DD}	120	—	V _{DD}	160	—	V _{DD}

INPUT
A16-A19 : ADDRESS BUS
ASTB : ADDRESS STROBE
BUFEN : BUFFER ENABLE
BUFEXRW : BUFFER READ/WRITE
CLKOUT : CLOCK
FLBUSY : BUSY STATUS
FLERR : ERROR STATUS
FLSCK : SERIAL CLOCK
IOWR : I/O WRITE
MRD : MEMORY READ
MWR : MEMORY WRITE
PRES : POWER-ON RESET
SCCDB0 : DATA READ CHIP SELECT
SCCDB1 : DATA WRITE CHIP SELECT
SCCDB2 : STATUS READ CHIP SELECT
STS-4 : I/O READ
SVS CK : SERIAL CLOCK
SVSI : SERIAL DATA
UBE : UPPER BYTE ENABLE

OUTPUT
AB00-AB17 : SYSTEM ADDRESS BUS
CTL-5 : I/O WRITE
DIAL CS : CHIP SELECT
DIAL RES : RESET
FLCLK : 1/2 CLOCK OUT
FLS0 : SERIAL DATA
IO OCS-7CS : TX INTERRUPT
IO OCS-7CS : CHIP SELECT
KDCCLK : 1/4 CLOCK OUT
KDCCS : CHIP SELECT
MBUFEN : DATA TRANSCIVER (MEMORY DATA ENABLE)
MCTL : DATA TRANSCIVER
MEM0CS-MEM7CS : CHIP SELECT
PBUFEN, PCTL : DATA TRANSCIVER
PIC0CS, 1CS : CHIP SELECT
PIT0CS, 1CS : CHIP SELECT
RAMLCS, HCS : CHIP SELECT
RESET0-RESET2 : RESET
R0MCS : CHIP SELECT
SSW0, 1 : CHIP SELECT
SCTXINT : TX INTERRUPT
SCUCS, SPCCS : CHIP SELECT
SPSCS : CHIP SELECT
SRV0CS, 1CS : CHIP SELECT
SRVRDCS, SRVWRCS : CHIP SELECT
SVS0 : SERIAL DATA
SVTXRDY : TX READY
SYSERR : LED OUTPUT
SYSFLCS, SYSLED : CHIP SELECT
SYS0CS, SYSSVCS : CHIP SELECT

INPUT/OUTPUT
AD00-AD15 : ADDRESS/DATA BUS
DB00-DB15 : SYSTEM DATA BUS
SCCDB0-SCCDB7 : DATA BUS



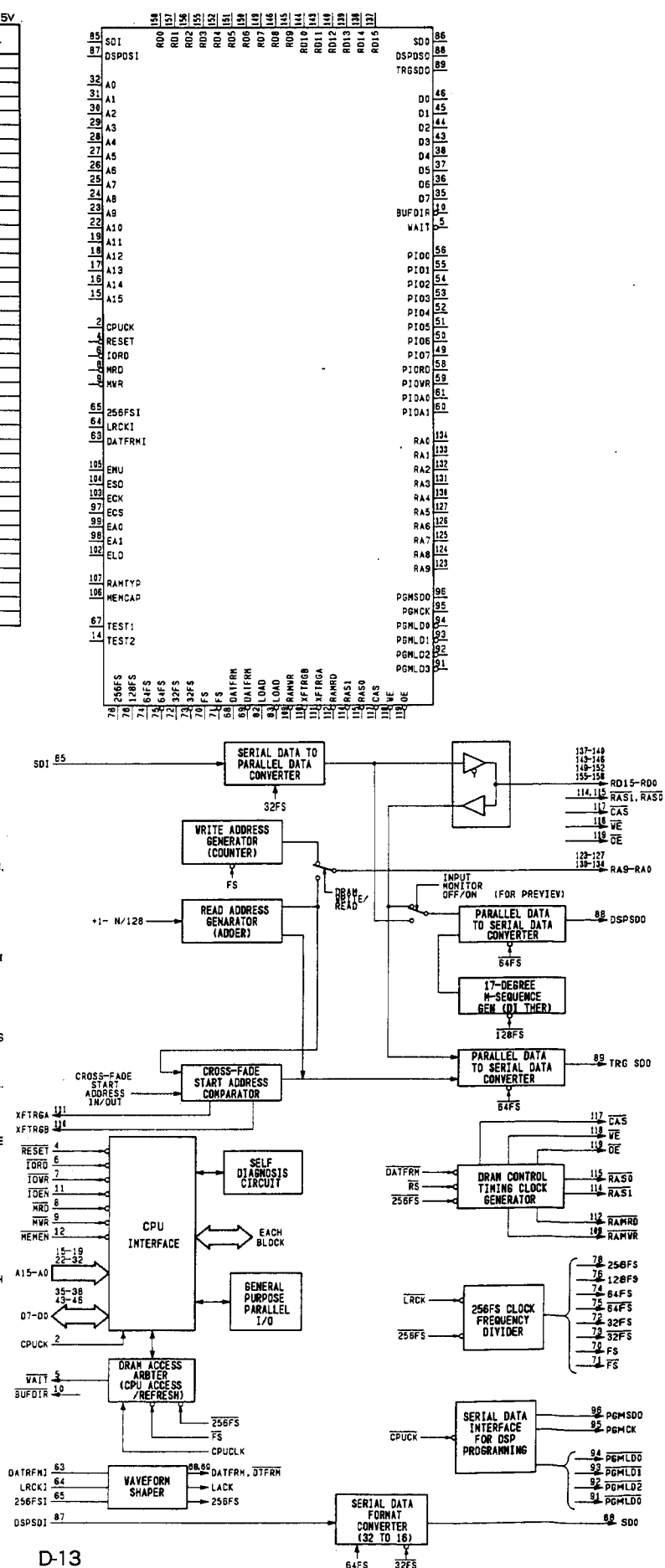
VDD = +5V

PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	-	VDD	41	-	GND	81	-	VDD	121	-	GND
2	I	CPUCK	42	-	GND	82	O	LOAD	122	-	GND
3	-	GND	43	I/O	D3	83	O	LOAD	123	O	RA9
4	I	RESET	44	I/O	D2	84	-	GND	124	O	RA8
5	O	WAIT	45	I/O	D1	85	I	SDI	125	O	RA7
6	I	IORD	46	I/O	D0	86	O	SDO	126	O	RA6
7	I	IOWR	47	-	VDD	87	I	DSPSD1	127	O	RA5
8	I	MRD	48	-	GND	88	O	DSPSD0	128	-	VDD
9	I	MWR	49	I/O	PI07	89	O	TRGSD0	129	-	GND
10	O	BUFDIR	50	I/O	PI06	90	-	GND	130	O	RA4
11	I	IOEN	51	I/O	PI05	91	O	PGMLD3	131	O	RA3
12	I	MEMEN	52	I/O	PI04	92	O	PGMLD2	132	O	RA2
13	-	GND	53	I/O	PI03	93	O	PGMLD1	133	O	RA1
14	I	TEST2	54	I/O	PI02	94	O	PGMLD0	134	O	RA0
15	I	A15	55	I/O	PI01	95	O	PGMCK	135	-	VDD
16	I	A14	56	I/O	PI00	96	O	PGMSD0	136	-	GND
17	I	A13	57	-	GND	97	I	ECS	137	I/O	RD15
18	I	A12	58	O	PIORD	98	I	EA1	138	I/O	RD14
19	I	A11	59	O	PIOWR	99	I	EA0	139	I/O	RD13
20	-	VDD	60	O	PIOA1	100	-	VDD	140	I/O	RD12
21	-	GND	61	O	PIOA0	101	-	GND	141	-	VDD
22	I	A10	62	-	VDD	102	I	ELD	142	-	GND
23	I	A9	63	I	DATFRMI	103	I	ECK	143	I/O	RD11
24	I	A8	64	I	LRCKI	104	I	ESD	144	I/O	RD10
25	I	A7	65	I	256FSI	105	I	EMU	145	I/O	RD9
26	I	A6	66	-	GND	106	I	MEMCAP	146	I/O	RD8
27	I	A5	67	I	TEST1	107	I	RAMTYP	147	-	VDD
28	I	A4	68	O	DATFRM	108	-	GND	148	-	GND
29	I	A3	69	O	DATFRM	109	O	RAMWR	149	I/O	RD7
30	I	A2	70	O	FS	110	O	XFTRGB	150	I/O	RD6
31	I	A1	71	O	FS	111	O	XFTRGA	151	I/O	RD5
32	I	A0	72	O	32FS	112	O	RAMRD	152	I/O	RD4
33	-	VDD	73	O	32FS	113	-	GND	153	-	VDD
34	-	GND	74	O	64FS	114	O	RAS1	154	-	GND
35	I/O	D7	75	O	64FS	115	O	RAS0	155	I/O	RD3
36	I/O	D6	76	O	128FS	116	-	GND	156	I/O	RD2
37	I/O	D5	77	-	GND	117	O	CAS	157	I/O	RD1
38	I/O	D4	78	O	256FS	118	O	WE	158	I/O	RD0
39	-	GND	79	-	GND	119	O	OE	159	-	GND
40	-	VDD	80	-	GND	120	-	VDD	160	-	GND

INPUT
 256FSI : MASTER CLOCK (256FS)
 A0 - A15 : CPU ADDRESS BUS
 CPUCK : CPU CLOCK
 DATFRMI : DAT FRAME SIGNAL
 DSPSDI : SERIAL DATA INPUT FROM DSP
 ECK, I : DSP ADDRESS FROM EMMULATOR
 ECK : DSP PROGRAM DATA SHIFT CLOCK INPUT FROM EMMULATOR
 ECK : DSP CHIP SELECT SIGNAL INPUT FROM EMMULATOR
 ELD : DSP PROGRAM DATA LOAD SIGNAL FROM EMMULATOR
 EMU : DSP EMULATION ON/OFF
 ESD : DSP PROGRAM SERIAL DATA INPUT FROM EMMULATOR
 IOEN : CHIP ENABLE SIGNAL IN I/O SPACE
 IORD : CPU I/O READ SIGNAL
 IOWR : CPU I/O WRITE SIGNAL
 LRCKI : LRCK SIGNAL (FS) WHICH BECOMES "L" WHEN SERIAL DATA LCH. AND "H" WHEN SERIAL DATA RCH.
 MEMCAP : MEMORY CAPACITY SELECT
 MEMEN : CHIP ENABLE SIGNAL IN MEMORY SPACE
 MRD : CPU MEMORY READ
 MWR : CPU MEMORY WRITE
 RAMTYP : DRAM TYPE SELECT
 RESET : CPU RESET SIGNAL
 SDI : SERIAL DATA INPUT. SERIAL DATA OF MSB FIRST AND 16-BIT/CH
 TEST1, TEST2 : TEST (NORMALLY FIXED TO L)

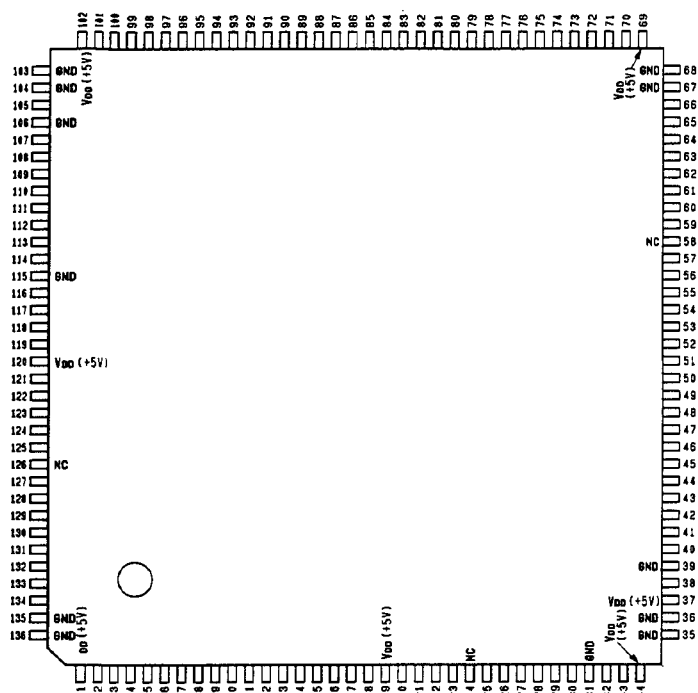
OUTPUT
 128FS, 64FS, 54FS : VARIOUS FREQUENCY-DIVIDED OUTPUT OF 256FS SIGNAL
 32FS, 32FS, FS, FS : 256FS SIGNAL OUTPUT
 256FS : USED AS DIR SIGNAL WHEN THE BUFFER (TRANCEIVER) IS EXTERNALLY INSTALLED TO THE DATA BUS.
 BUFDIR : DRAM DRAM COLUMN ADDRESS STROBE SIGNAL OUTPUT
 CAS : DAT FRAME SIGNAL OUTPUT
 DATFRM, DATFRM : SERIAL DATA OUTPUT TO DSP. MSB FIRST 32 BIT/CH SERIAL DATA.
 DSPSD0 : PARALLEL/SERIAL CONVERSION LOAD SIGNAL OUTPUT
 LOAD, LOAD : DRAM OUTPUT ENABLE SIGNAL OUTPUT
 OE : SHIFT CLOCK OUTPUT OF DSP PROGRAM DATA
 PGMCK : DSP PROGRAM DATA LOAD SIGNAL OUTPUT
 PGMLD0 - PGMLD3 : DSP PROGRAM SERIAL DATA OUTPUT MSB FIRST 8 BITS ARE OUTPUT.
 PGMSD0 : PARALLEL I/O ADDRESS SIGNAL (NORMALLY FIXED TO L)
 PIA0, I : PARALLEL I/O READ SIGNAL (NORMALLY "H")
 PIORD : PARALLEL I/O WRITE SIGNAL (NORMALLY "H")
 PIA0 - RA9 : DRAM ADDRESS OUTPUT
 RAMRD : DRAM READ MONITOR LED OUTPUT
 RAMWR : DRAM WRITE MONITOR LED OUTPUT
 RAS0, RAS1 : DRAM LOW ADDRESS STROBE SIGNAL OUTPUT
 RD0 - RD15 : DRAM DATA BUS
 READY : CPU READY (WAIT) SIGNAL (NORMALLY "H")
 SDO : SERIAL DATA OUTPUT
 TRGSD0 : TRIGGER SERIAL DATA OUTPUT TO DSP. MSB FIRST 32 BIT/CH SERIAL DATA.
 WE : DRAM WRITE ENABLE SIGNAL OUTPUT
 XFTRGB, XFTRGA : MONITOR LED OUTPUT OF XFAD TRIGGER OUTPUT

INPUT/OUTPUT
 DO - D7 : CPU DATA BUS
 PIA0 - PIO7 : 8 BIT DATA BUS OF PARALLEL I/O (NORMALLY "H-Z")
 RD0 - RD15 : DRAM DATA BUS



CXD8184AQ (SONY)

C-MOS R-DAT PERIPHERAL CIRCUIT
- TOP VIEW -



PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	—	V _{DD}	35	—	GND	69	—	V _{DD}	103	—	GND
2	O	AIN	36	—	GND	70	I	MT1	104	—	GND
3	O	AMON	37	—	V _{DD}	71	I	MT0	105	O	TRCK
4	O	BIT1	38	O	BCK	72	I	TRGD	106	—	GND
5	O	BIT2	39	—	GND	73	O	TRDO	107	I/O	DB7
6	O	BIT3	40	I	WFS	74	I	TRAO	108	I/O	DB6
7	O	BIT4	41	I	VFS	75	O	TRAQ	109	I/O	DB5
8	O	EDIT	42	I	DFS	76	I	CLK0	110	I/O	DB4
9	O	IMON	43	I	ATD1	77	I	CKRA	111	I/O	DB3
10	O	INWR	44	O	CLED	78	I	CKRD	112	I/O	DB2
11	I	MTSR	45	O	ILED	79	O	SVCK	113	I/O	DB1
12	I	MTSL	46	O	HDMT	80	I	CS4M	114	I/O	DB0
13	O	OTMT	47	O	MUTA	81	I	LRCK	115	—	GND
14	O	OTWR	48	I	SBSO	82	I	DFCK	116	I	AB4
15	O	POST	49	I	SVRO	83	I	SRVS	117	I	AB3
16	O	RCLR	50	I	C120	84	I	MCCLK	118	I	AB2
17	O	ROCK	51	I	RD20	85	O	MCKO	119	I	AB1
18	O	REH	52	I	RD30	86	I	XTS4	120	—	V _{DD}
19	—	V _{DD}	53	I	RD40	87	I	XTS3	121	I	XWR
20	O	RTS1	54	I	RD70	88	I	XTS2	122	I	XRD
21	O	RTS2	55	I	MTG0	89	O	FSEL	123	I	XSE
22	O	RTS3	56	I	SBSA	90	O	CRSL	124	I	XTSC
23	O	RTS4	57	I	SVRA	91	O	CRSH	125	I	SOKA
24	—	NC	58	—	NC	92	—	NC	126	—	NC
25	O	RTS5	59	I	C12A	93	O	CHRF	127	I	SOKD
26	O	RTS6	60	I	RD2A	94	O	CHVF	128	O	REWR
27	O	RTS7	61	I	RD3A	95	I	TSTO	129	O	REFD
28	O	SER	62	I	RD4A	96	I	CRCK	130	O	XREW
29	O	WAR	63	I	RA7A	97	I	XTS1	131	O	XC16
30	O	XRAW	64	I	MTGA	98	O	MSRF	132	O	CFWD
31	—	GND	65	I	MT3	99	O	MSVF	133	I	ESC
32	O	EMP	66	I	MT2	100	—	GND	134	I	XRST
33	O	DEEM	67	—	GND	101	I	VCKO	135	—	GND
34	—	V _{DD}	68	—	GND	102	—	V _{DD}	136	—	GND

78	CKRD	TRDD	73
77	CKRA	TRDD	75
76	CKL0	TRAD	85
84	MT6A	BIT4	7
55	MT6D	BIT3	6
63		BIT2	5
62	RD7A	BIT1	4
61	RD4A		
60	RD2A	RTS7	27
54		RTS5	25
53	RD70	RTS4	23
52	RD22	RTS3	22
51	RD3D	RTS2	20
50	RD20	RTS1	19
49	C12A	AIN	2
50	C12A	AMON	8
57	SVRD	ED17	8
49	SVRD	IMON	9
56	SBSA	INWR	10
48	SBS0		
65	MT3	HDMT	46
66	MT2	OTMT	13
70	MT1	CTWR	14
71	MT0		
116	AB4	DB7	167
117	AB3	DB5	168
118	AB2	DB4	169
119	AB1	DB3	170
120	SOKA	DB1	171
127	SOKD	DB2	172
12	MTSL	DB0	173
11	MTSR		
82	DFCK	BCK	38
181	VCKC	MSVF	92
81		TRSF	165
96	LRCK	MSRF	98
40	WFS	CHRF	83
41	VFS	CHVF	84
42	DFS	SVCK	79
83	SRVS	POST	15
130	ESC	RCRL	16
80	C94M	RCOK	17
43	ATD1	REH	18
74	TRGA	SER	28
72	TRGD	VAR	29
84		RAW	30
86		DEP	32
87		DEEN	33
88	MCLK	CLED	44
89		ILEO	45
90	TS4	MUTA	47
91	TS3		
92	TS2	FSEL	89
93	TS1	CRSL	90
94		CRSH	91
95	TS70		
121	WR	REWR	128
122	RD	REAR	129
123	SE	R16	130
124	SE	CW0	131
125	TSC		132
126	RST		

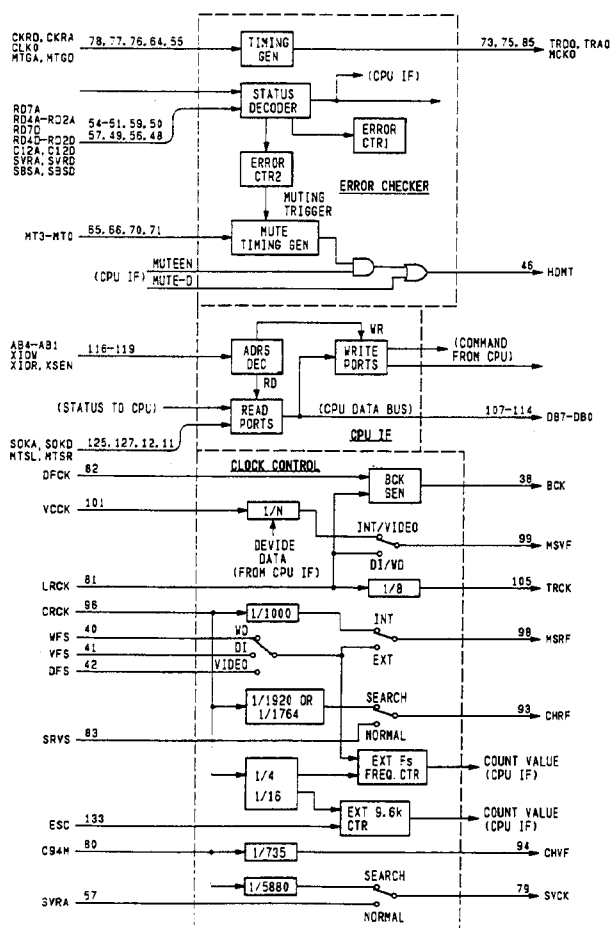
INPUT

AB1-AB4 : CPU ADDRESS BUS (258 to 55B)
 ATD1 : OFF TRACK DETECTION SIGNAL H: ATF SYNC AND PCM SIGNAL ARE NO
 GOOD AT REPRODUCTION
 C12A : C1/C2 DISCRIMINATION SIGNAL USED AS TIMING SIGNAL FOR ERROR
 CHECKER
 C12D : C1/C2 DISCRIMINATION SIGNAL USED AS TIMING SIGNAL FOR ERROR
 CHECKER
 C94M : FCH CLOCK SIGNAL (9.408MHz typ.)
 CKRA : FCH SYSTEM CLOCK SIGNAL OF CXD1008Q AND CXD1009Q
 (18.816MHz typ.) USED AS CLOCK SIGNAL FOR ERROR CHECKER
 CKRD : FCH SYSTEM CLOCK SIGNAL OF CXD1008Q AND CXD1009Q
 (4.704MHz typ.) USED AS CLOCK SIGNAL FOR ERROR CHECKER
 CLK0 : FCH CLOCK SIGNAL OF CXD1008Q AND CXD1009Q. USED AS CLOCK
 SIGNAL FOR ERROR CHECKER
 CRCK : FS CRYSTAL OSCILLATION CLOCK. USED BY CLOCK CONTROL BLOCK
 DFC0 : FS CLOCK SIGNAL (258 fs)
 DFS : FS EXTERNAL SYNC SIGNAL EXTRACTED FROM AES/EBU D-L
 ESC : EXTERNAL SOURCE (PARALLEL REMOTE) INPUT. (9.6kHz typ.)
 LRCK : FS CLOCK SIGNAL (fs)
 MCLK : CLOCK SIGNAL FOR ERROR CHECKER
 MT0-MT3 : MUTE TIME SETTING VALUE (MT0 = LSB, MT3 = MSB)
 MTGA : DURING ERROR MONITOR OUTPUT TO DATA BUS: H. USED AS TIMING
 SIGNAL FOR ERROR CHECKER
 MTGD : DURING ERROR MONITOR OUTPUT TO DATA BUS: H. USED AS TIMING
 SIGNAL FOR ERROR CHECKER
 MTSL : MUTE STATUS. H: RCH MUTE IS BEING PROCESSED.
 MTSR : MUTE STATUS. H: LCH MUTE IS BEING PROCESSED.
 RD2A-4A, 7A : DATA BUS OF CXD1008Q AND CXD1009Q.
 RD2D-4D, 7D : DATA BUS OF CXD1008Q AND CXD1009Q. FROM HERE, ERROR STATUS
 IS EXTRACTED
 S8SA : CXD1009Q SUBCODE DATA I/O TIMING REFERENCE SIGNAL. USED AS
 TIMING SIGNAL FOR ERROR CHECKER
 S8SD : CXD1009Q SUBCODE DATA I/O TIMING REFERENCE SIGNAL. USED AS
 TIMING SIGNAL FOR ERROR CHECKER
 SOKA : H: ADVANCED S8SY OK
 SOKD : H: DELAYED S8SY OK
 SRVS : FS CLOCK SIGNAL (12.8kHz typ.)
 SVRA : DRUM SERVO REFERENCE SIGNAL USED AS TIMING SIGNAL FOR ERROR
 CHECKER
 SVRD : DRUM SERVO REFERENCE SIGNAL USED AS TIMING SIGNAL FOR ERROR
 CHECKER
 TRGA : TIMING SIGNAL FOR ERROR CHECKER
 TRGD : TIMING SIGNAL FOR ERROR CHECKER
 TS0 : TEST PIN. NORMALLY L
 VCCK : VCO OUTPUT CLOCK SIGNAL OF MASTER PLL USED BY CLOCK CONTROL
 BLOCK
 VFS : FS EXTERNAL SYNC SIGNAL EXTRACTED FROM VIDEO REFERENCE
 WFS : FS EXTERNAL SYNC SIGNAL. INPUT FROM WORD SYNC IN.
 XRD : CPU BUS READ ENABLE SIGNAL (LOW ACTIVE)
 XRST : RESET PIN. L: RESET
 XSE : CPU BUS SP BOARD SELECT SIGNAL (LOW ACTIVE)
 XTS1-XTS4 : TEST PIN. NORMALLY H
 XTSC : TEST PIN. NORMALLY H
 XWR : CPU BUS WRITE ENABLE SIGNAL (LOW ACTIVE)

INPUT/OUTPUT
 DB0-DB7 : CPU DATA BUS (DB0 = LSB, DB7 = MSB)

OUTPUT

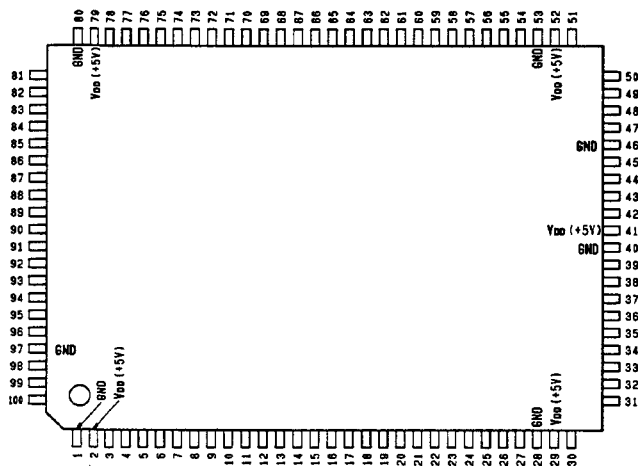
AIN : INPUT SEL SWITCHING. H: ANALOG IN, L: DIGITAL IN
 AMON : REPRODUCTION SOUND MONITOR SWITCHING. H: ADVANCED REPRODUCTION
 SOUND MONITOR, L: DELAYED REPRODUCTION SOUND MONITOR.
 BIT1-BIT4 : 32 fs CLOCK SIGNAL
 CFWO : THRESHOLD VALUE OF ZERO CROSS MUTE (BIT1 = LSB, BIT4 = MSB)
 CHRF : FOR RF PLL CONTROL. H: TAPE PATH IN FORWARD DIRECTION
 CHVR : CHANNEL PLL REFERENCE SIGNAL (12.8kHz typ.) CONNECTED TO CHANNEL
 PLL PHASE COMPARATOR
 CHVR : CHANNEL PLL COMPARISON SIGNAL (12.8kHz typ.) CONNECTED TO CHANNEL
 PLL PHASE COMPARATOR
 CLED : H: WHEN C1 ERROR IS DETECTED DURING REPRODUCTION. USED FOR
 LIGHTENING LED
 CRSH : XTAL OSC CONTROL SIGNAL H: 24.5760MHz XTAL ON CONNECTED TO
 CRYSTAL OSCILLATION CIRCUIT CONNECTED TO CRYSTAL OSCILLATION
 CIRCUIT
 CRSL : XTAL OSC CONTROL SIGNAL H: 22.5792MHz XTAL ON
 CONTROLS DA DEEMPHASIS H: DA DEEMPHASIS ON
 EDIT : RECORD SIGNAL SWITCHING SIGNAL H: EDIT (SELECTS SIGNAL FROM
 MEMORY START MEMORY) L: NORMAL (SELECTS D IN/A IN SIGNAL)
 EMP : CONTROLS AD EMPHASIS H: AD EMPHASIS ON
 FSEL : FS SELECT SIGNAL H: 48kHz L: 44.1kHz
 HDMT : MUTES DELAYED 0.8 H: MUTE
 ILED : H: WHEN POINTER COPY OR ALL POINTER IS DETECTED AT C2 DURING
 REPRODUCTION
 IMON : MONITOR SELECTION. H: INPUT, L: REPRO
 INWR : FOR EDIT MEMORY TEST H: EM TEST MODE, L: NORMAL. NORMALLY L
 MCKO : CLOCK SIGNAL FOR ERROR CHECKER
 MSRF : MASTER PLL REFERENCE SIGNAL CONNECTED TO MASTER PLL PHASE
 COMPARATOR
 MSVF : MASTER PLL COMPARISON SIGNAL CONNECTED TO MASTER PLL PHASE
 COMPARATOR
 MUTA : MUTES ADVANCED 0.8 H: MUTE
 OTMT : CONTROLS ZERO CROSS MUTE CIRCUIT OF CXD8185AQ H: MUTE
 OTWR : FOR MEMORY START MEMORY TEST H: IM TEST MODE, L: NORMAL
 POST : SWITCHES THE INPUT MONITOR SIGNAL H: POST
 (SELECTS SIGNAL FROM EDIT MEMORY) L: PRE (SELECTS D IN/A IN SIGNAL)
 RCLR : FOR CXD8185AQ TEST. NORMALLY L
 RCOK : REC CONTROL SIGNAL H: RECORDING ABLE
 REH : SWITCHES THE OUTPUT SIGNAL H: REHEARSAL (SELECTS SIGNAL FROM
 MEMORY START MEMORY) L: NORMAL (SELECTS SIGNAL FROM EDIT
 MEMORY)
 RERD : AUXILIARY READ PORT ENABLE SIGNAL (LOW ACTIVE)
 REWR : AUXILIARY WRITE PORT ENABLE SIGNAL (LOW ACTIVE)
 RTS1 : FOR RECORDING TEST H: REC CON TEST MODE CONNECTED TO RTS1 OF
 CXD8185AQ
 RTS2 : FOR RECORDING TEST. SELECTS SIGNAL FOR TEST RECORDING. H: EXT (AT
 THIS TIME, RTS3 AND 7 ARE IGNORED), L: INT
 RTS3 : FOR RECORDING TEST. SELECTS SIGNAL FOR TEST RECORDING TO BE PAIRED
 WITH 1.57MHz SIGNAL. H: 4.7MHz, L: 130kHz
 RTS4 : FOR RECORDING TEST. SELECTS HEAD FOR TEST RECORDING. H: DELAYED,
 L: ADVANCED
 RTS5 : FOR RECORDING TEST. SELECTS HEAD FOR TEST RECORDING.
 H: ONE HEAD, L: BOTH HEADS (AT THIS TIME, RTS6 IS IGNORED.)
 RTS6 : FOR RECORDING TEST. SELECTS HEAD FOR TEST RECORDING.
 H: B HEAD, L: A HEAD
 RTS7 : FOR RECORDING TEST. SELECTS HEAD FOR RECORDING 1.57MHz SIGNAL.
 H: B HEAD, L: A HEAD
 SER : DRQ GEN H: TAPE PATH SEARCH MODE, L: NORMAL
 SVCK : DRUM SERVO REFERENCE SIGNAL
 TRAO : TIMING SIGNAL FOR ERROR CHECKER
 TRCK : LRCK 1/8 FREQUENCY-DIVIDED CLOCK, FOR SY TIMER
 TRDO : TIMING SIGNAL FOR ERROR CHECKER
 WAR : CONTROLS EXSY PHASE H: WAR MODE, L: MODE SPECIFIED BY XRAW
 XC16 : FOR RF PLL CONTROL H: TAPE PATH BY x16 AND x8
 XRAW : CONTROLS EXSY PHASE, L: RAW MODE, H: SUBIN MODE
 XREW : FOR RF PLL CONTROL H: TAPE PATH SEARCH MODE



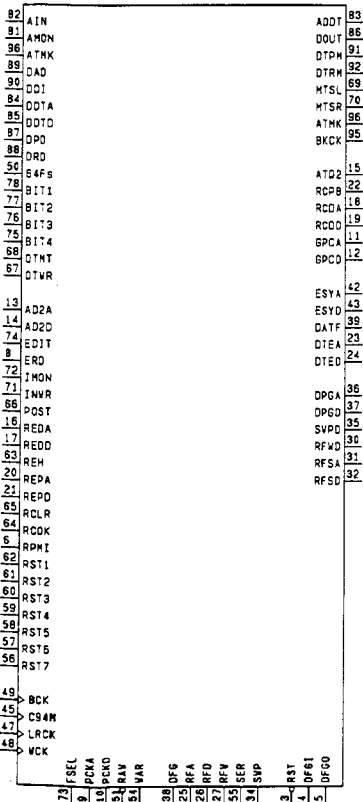
CXD8185AQ (SONY) FLAT PACKAGE

C-MOS R-DAT PERIPHERAL CIRCUIT

- TOP VIEW -



PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	-	GND	26	I	RFD	51	I	RAW	76	I	BIT3
2	-	VDD	27	I	RFW	52	-	VDD	77	I	BIT2
3	I	RST	28	-	GND	53	-	GND	78	I	BIT1
4	I	DFGI	29	-	VDD	54	I	WAR	79	-	VDD
5	O	DFGO	30	O	RFWD	55	I	SER	80	-	GND
6	I	RPMI	31	O	RPSA	56	I	RTS7	81	I	AMON
7	I	ATMI	32	O	RPSD	57	I	RTS6	82	I	AIN
8	I	ERD	33	I	TST4	58	I	RTS5	83	O	ADDT
9	I	PCKA	34	I	SWP	59	I	RTS4	84	I	DDTA
10	I	PCKD	35	O	SWPD	60	I	RTS3	85	I	DDTD
11	O	GPCA	36	O	DPGA	61	I	RTS2	86	O	DDUT
12	O	GPCB	37	O	DPGD	62	I	RTS1	87	I	DPD
13	I	AD2A	38	I	DPG	63	I	REH	88	I	DRD
14	I	AD2D	39	O	DATF	64	I	RCOK	89	I	DAD
15	O	ATD2	40	-	GND	65	I	RCLR	90	I	DDI
16	I	REDA	41	-	VDD	66	I	POST	91	O	DTPM
17	I	REDD	42	O	ESYA	67	I	OTWR	92	O	DTRM
18	O	RCDA	43	O	ESYD	68	I	OTMT	93	I	DPAS
19	O	RCDD	44	I	ARE	69	O	MTSL	94	I	TST5
20	I	REPA	45	I	CS4M	70	O	MTSR	95	O	BKCK
21	I	REPD	46	-	GND	71	I	INWR	96	O	ATMK
22	O	RCPB	47	I	LRCK	72	I	IMON	97	-	GND
23	O	DTEA	48	I	WCK	73	I	FSEL	98	I	TST3
24	O	DTED	49	I	BCK	74	I	EDIT	99	I	TST2
25	I	RFA	50	I	64FS	75	I	BIT4	100	I	TST1



INPUT

- 64FS
- AD2A
- AD2D
- AIN
- AMON
- ARE
- ATMK
- BCK
- BIT1 - BIT4
- CS4M
- DAD
- DDI
- DDTA
- DDTD
- DFG
- DFGI
- DPAS
- DPD
- DRD
- EDIT
- ERD
- FSEL
- IMON
- INWR
- LRCK
- OTMT
- OTWR
- PCKA
- PCKD
- POST
- RAW
- RCLR
- RCOK
- REDA
- REDD
- REH
- REPA
- REPD
- RFA
- RFD
- RFW
- RPMI
- RST
- RTS1 - RTS7
- SER
- SWP
- WAR
- WCK

OUTPUT

- 64 - Fs
- ATD2A IN
- ATD2-D IN
- ANALOG IN
- ADVANCED HEAD PB MONITOR
- AREA
- ATF MASK WINDOW IN
- BIT CLOCK
- ZERO CROSS MUTE LEVEL CONTROL
- CLOCK 9.4MHz
- A/D CONVERTED AUDIO DATA
- DI INPUT AUDIO DATA
- PLAYBACK AUDIO DATA FROM LEADING HEAD SIGNAL PROCESSING IC
- PLAYBACK AUDIO DATA FROM TRAILING HEAD SIGNAL PROCESSING IC
- DRUM FG IN
- DRUM FG IN
- DATA PASS (SKIP ZERO CROSS MUTE)
- PLAYBACK AUDIO READ DATA FROM EDIT MEMORY
- PLAYBACK AUDIO READ DATA FROM INSTANT MEMORY
- RECORD SIGNAL SWITCHING ("H": EDIT, "L": NORMAL)
- EXTERNAL REC DATA IN
- FS SELECT
- MONITOR SELECTION
- IN WRITE
- LR CLOCK
- OUT MUTE
- OUT WRITE
- PLCK-A IN
- PLCK-D IN
- POST
- READ AFTER WRITE (ACTIVE LOW)
- RAM CLEAR
- REC OK SIGNAL
- RECDATA-A (from CXD1009) IN
- RECDATA-D (from CXD1009) IN
- REHEARSAL
- RECPB-A (from CXD1009) IN
- RECPB-D (from CXD1009) IN
- RF DETECTION-A IN
- RF DETECTION-D IN
- RF WINDOW IN
- REC/PB MASK WINDOW IN
- RESET
- REC TEST
- SEARCH
- SWITCHING PULSE
- WRITE AFTER READ
- WORD CLOCK

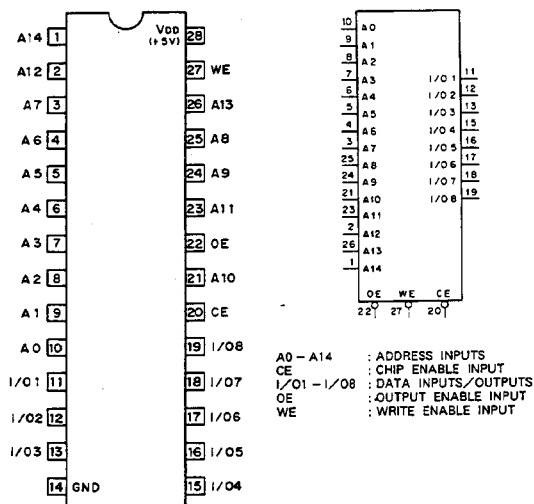
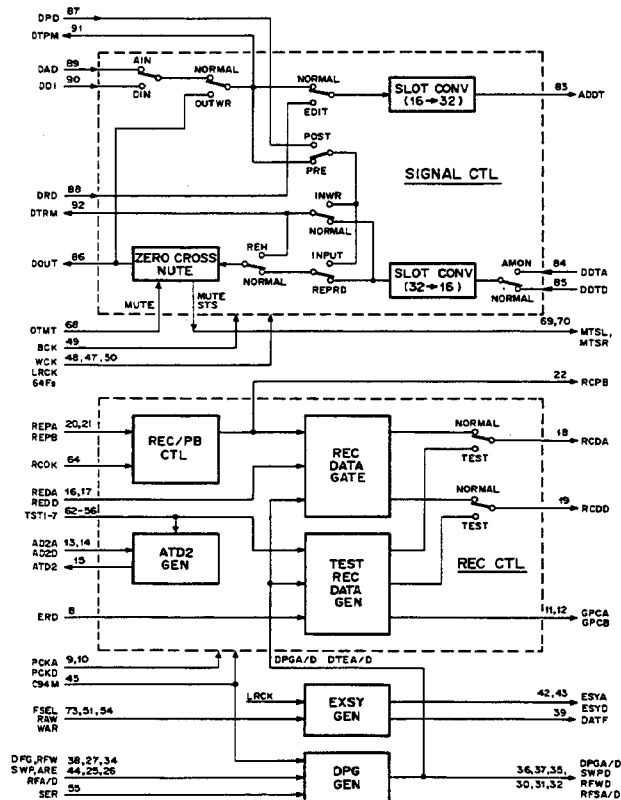
OUTPUT

- ADDT
- ATD2
- ATMK
- BKCK
- DATF
- DFGO
- DTEA
- DTED
- DDUT
- DPGA
- DPGD
- DTPM
- DTRM
- ESYA
- ESYD
- GPCA
- GPCB
- MTSL
- MTSR
- RCDA
- RCDD
- RCPB
- RFWD
- RPSA
- RPSD
- SWPD

RECORD AUDIO DATA TO SIGNAL PROCESSING IC

- ATD2 OUT
- REC/PB MASK WINDOW OUT
- BLOCK CLOCK
- DAT FRAME
- DRUM FG OUT
- DATA ENABLE-A OUT
- DATA ENABLE-D OUT
- DATA OUT
- DELAYED PG-A
- DELAYED PG-D
- AUDIO WRITE DATA TO EDIT MEMORY
- AUDIO WRITE DATA TO INSTANT MEMORY
- EXSY-A
- EXSY-D
- GATED PLCK A OUT
- GATED PLCK B OUT
- MUTE STATUS L
- MUTE STATUS R
- REC DATA-A OUT
- REC DATA-D OUT
- REC/PB OUT
- RF WINDOW-D OUT
- RF SAFE-A OUT
- RF SAFE-D OUT
- SWITCHING PULSE-D

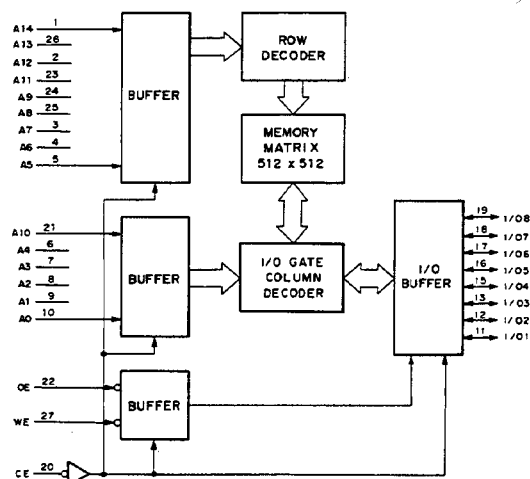
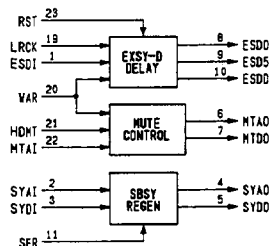
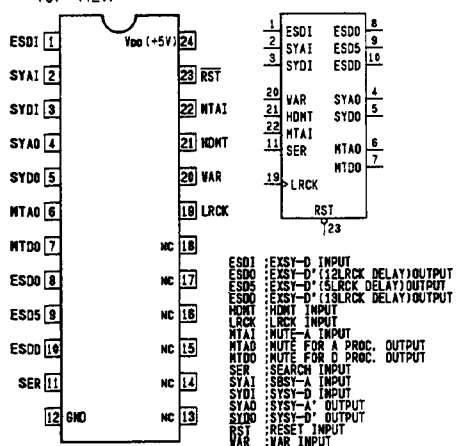
CXK58257AM-10LL (SONY) FLAT PACKAGE
MS62256CLL-10FC (MOSEL) FLAT PACKAGE
C-MOS 256K (32768x8)-BIT STATIC RAM
- TOP VIEW -



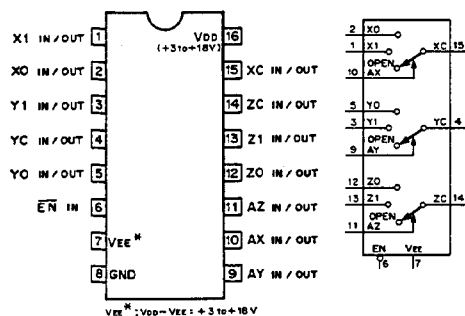
CE	OE	WE	MODE	I/O TERMINAL
1	x	x	NOT SELECT	HIGH IMPEDANCE
0	1	1	OUTPUT DISABLE	HIGH IMPEDANCE
0	0	1	READ	OUTPUT DATA
0	x	0	WRITE	INPUT DATA

0 : LOW LEVEL
1 : HIGH LEVEL
x : DON'T CARE

CXD8319M (SONY)
C-MOS R-DAT SYNC REC CIRCUIT
- TOP VIEW -



HD14053BFP (HITACHI) FLAT PACKAGE
MC14053BF (MOTOROLA) FLAT PACKAGE
C-MOS TRIPLE 2-CHANNEL ANALOG MULTIPLEXERS/DEMULTIPLEXERS
- TOP VIEW -

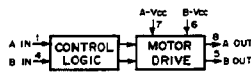
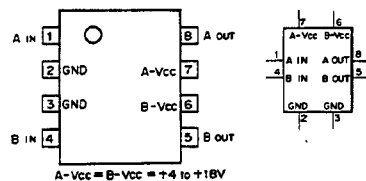


V_{EE}^* ; $V_{DD} - V_{EE} = +3$ to $+18$ V

0: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE.

CONT. INPUTS	ON
EN A (X,Y,Z)	CHANNEL
0	0
0	1
1	X

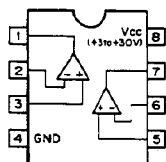
MB3763PF (FUJITSU) FLAT PACKAGE
BI-DIRECTIONAL MOTOR DRIVER
- TOP VIEW -



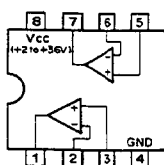
INPUTS		OUTPUTS		OUTPUT MODE
A IN	B IN	A OUT	B OUT	
0	0	H-Z	H-Z	STAN-BY
0	1	H	L	OPERATE
1	0	L	H	OPERATE
1	1	L	L	BRAKE

0: Less than 0.4V
1: More than 2.4V
L: LOW LEVEL
H: HIGH LEVEL
H-Z: HIGH IMPEDANCE

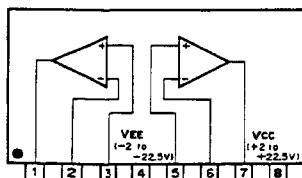
LM358PS (TI) FLAT PACKAGE
DUAL OPERATIONAL AMPLIFIERS
- TOP VIEW -



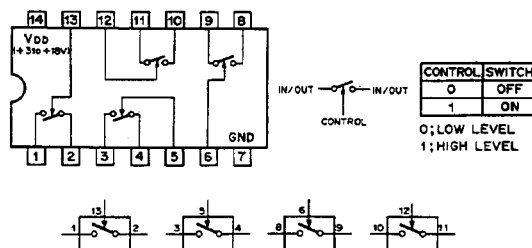
LM393PS (TI) FLAT PACKAGE
DUAL VOLTAGE COMPARATORS
- TOP VIEW -



M5219L (MITSUBISHI)
LOW NOISE OPERATIONAL AMPLIFIER
- SIDE VIEW -



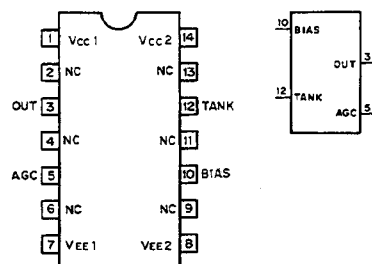
MC14066BF (MOTOROLA) FLAT PACKAGE
C-MOS QUAD BILATERAL ANALOG SWITCH
- TOP VIEW -



CONTROL	SWITCH
0	OFF
1	ON

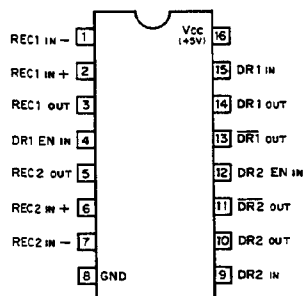
0: LOW LEVEL
1: HIGH LEVEL

MC1648P (MOTOROLA)
ECL VOLTAGE CONTROLLED OSCILLATOR
- TOP VIEW -



Supply Voltage	Supply Pins	GND Pins
+5.0 Vdc	1, 14	7, 8
-5.2 Vdc	7, 8	1, 14

MC34051P (MOTOROLA)
RS422 DRIVER/RECEIVER
- TOP VIEW -

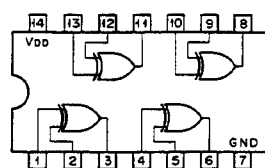


DREN	MODE
0	DISABLE
1	ENABLE

0 ; LOW LEVEL
1 ; HIGH LEVEL

DR ; DRIVER
DR EN ; DRIVER ENABLE
REC ; RECEIVER

MC74HC86AF (MOTOROLA) FLAT PACKAGE
SN74HC86ANS (TI) FLAT PACKAGE
TC74HC86AF (TOSHIBA) FLAT PACKAGE
CMOS QUAD EXCLUSIVE OR GATES
- TOP VIEW -



$$Y = A \oplus B = A \cdot \bar{B} + \bar{A} \cdot B$$

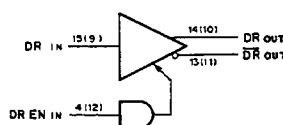
A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

0 ; LOW LEVEL
1 ; HIGH LEVEL

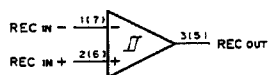
NOTE:

TYPE	V _{DD}
TC74AC86 TYPE	+2 to +5.5V
OTHER TYPES	+2 to +6V

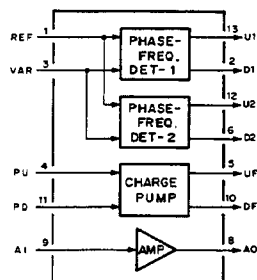
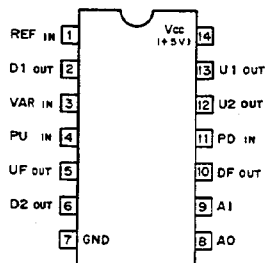
DRIVER CIRCUIT



RECEIVER CIRCUIT



MC4044P (MOTOROLA)
PHASE-FREQUENCY DETECTOR
- TOP VIEW -



REF ; REFERENCE IN
VAR ; VARIABLE IN
U1 ; UP OUT 1
D1 ; DOWN OUT 1
U2 ; UP OUT 2
D2 ; DOWN OUT 2
PU ; CHARGE PUMP UP IN
PD ; CHARGE PUMP DOWN IN
UF ; CHARGE PUMP UP OUT
DF ; CHARGE PUMP DOWN OUT
AI ; FILTER AMP IN
AO ; FILTER AMP OUT

PHASE FREQ. DET-1
FALLING EDGE SENSING TYPE

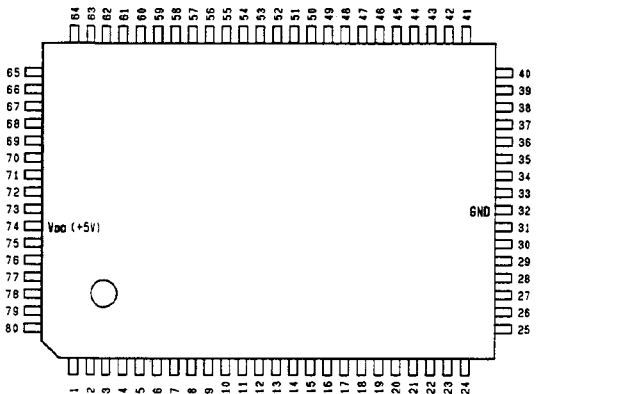
INPUTS	OUTPUTS
	U1 D1
$f_v = f_r$	1 1
$\phi_v = \phi_r$	1 1
$f_v < f_r$	0 1
ϕ_v lags ϕ_r	0 1
$f_v > f_r$	1 0
ϕ_v leads ϕ_r	1 0

PHASE FREQ. DET-2
FOR 50% DUTY CYCLES

INPUTS	OUTPUTS
REF VAR	U2 D2
0 0	1 1
0 1	1 1
1 0	0 1
1 1	1 0

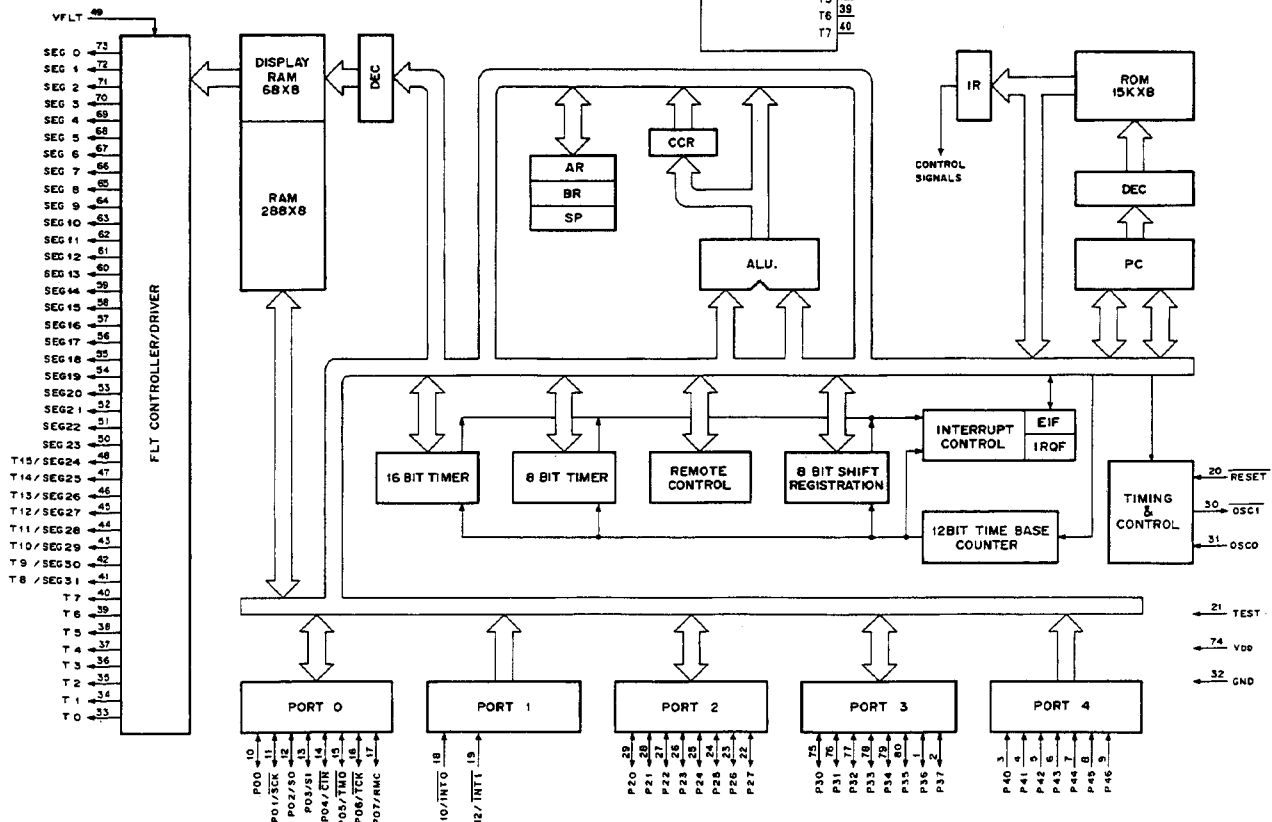
0 ; LOW LEVEL
1 ; HIGH LEVEL

MSC62408 (OKI)

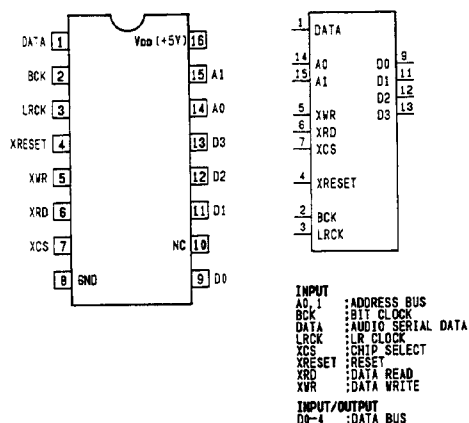
C-MOS SINGLE CHIP MICROCONTROLLER WITH FLT DRIVER
- TOP VIEW -

PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	I/O	P36	21	I	TEST	41	O	T8/SEG31	61	O	SEG12
2	I/O	P37	22	I/O	P27	42	O	T9/SEG30	62	O	SEG11
3	I	P40	23	I/O	P26	43	O	T10/SEG29	63	O	SEG10
4	I	P41	24	I/O	P25	44	O	T11/SEG28	64	O	SEG9
5	I	P42	25	I/O	P24	45	O	T12/SEG27	65	O	SEG8
6	I	P43	26	I/O	P23	46	O	T13/SEG26	66	O	SEG7
7	I	P44	27	I/O	P22	47	O	T14/SEG25	67	O	SEG6
8	I	P45	28	I/O	P21	48	O	T15/SEG24	68	O	SEG5
9	I	P46	29	I/O	P20	49	I	VFLT	69	O	SEG4
10	I/O	P00	30	O	OSC1	50	O	SEG23	70	O	SEG3
11	I/O	P01/SCK	31	I	OSC0	51	O	SEG22	71	O	SEG2
12	I/O	P02/SO	32	-	GND	52	O	SEG21	72	O	SEG1
13	I/O	P03/SI	33	O	T0	53	O	SEG20	73	O	SEG0
14	I/O	P04/CIN	34	O	T1	54	O	SEG19	74	-	VDD
15	I/O	P05/TMO	35	O	T2	55	O	SEG18	75	I/O	P30
16	I/O	P06/TCR	36	O	T3	56	O	SEG17	76	I/O	P31
17	I/O	P07/RMC	37	O	T4	57	O	SEG16	77	I/O	P32
18	I	P10/INT0	38	O	T5	58	O	SEG15	78	I/O	P33
19	I	P12/INT1	39	O	T6	59	O	SEG14	79	I/O	P34
20	I	RESET	40	O	T7	60	O	SEG13	80	I/O	P35

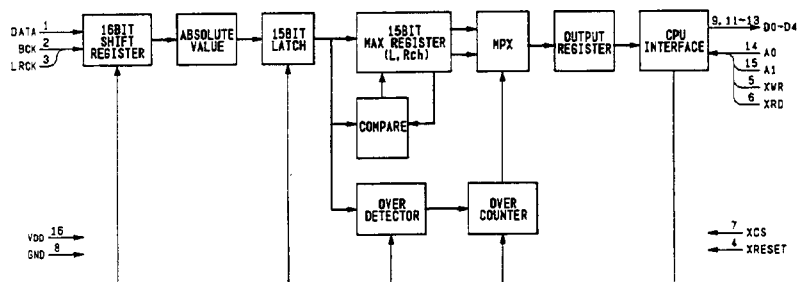
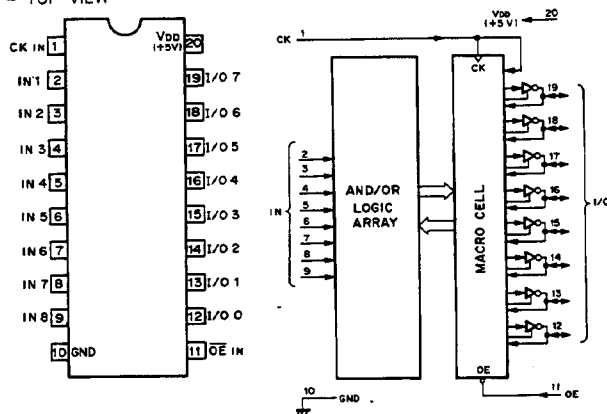
10	P00	29	OSC0, OSC1	: EXTERNAL CRYSTAL
11	P01/SCK	28	OSC0	: SYSTEM CLOCK INPUT.
12	P02/SO	27	P00	: I/O PORT0
13	P03/SI	26	P01/SCK	: I/O PORT0/SERIAL CLOCK INPUT
14	P04/CIN	25	P02/SO	: I/O PORT0/SERIAL DATA OUTPUT
15	P05/TMO	24	P03/SI	: I/O PORT0/SERIAL DATA INPUT
16	P06/TCR	23	P04/CIN	: I/O PORT0/COUNT INPUT
17	P07/RMC	22	P05/TMO	: I/O PORT0/TIMER OUTPUT
18	P10/INT0	21	P06/TCR	: I/O PORT0/TIMER CLOCK INPUT
19	P12/INT1	20	P07/RMC	: I/O PORT0/REMOTE CONTROL INPUT
3	P40	75	P10/INT0	: INPUT PORT1/EXTERNAL INTERRUPT INPUT
4	P41	76	P12/INT1	: INPUT PORT1/EXTERNAL INTERRUPT INPUT
5	P42	77	P20 - P27	: INPUT/OUTPUT PORT2
6	P43	78	P30 - P37	: INPUT/OUTPUT PORT3
7	P44	79	P40 - P47	: INPUT PORT4
8	P45	80	RESET	: SYSTEM RESET INPUT
9	P46	81	SEG0 - SEG23	: FLT SEGMENT DRIVE OUTPUT
49	VFLT	82	SEG24/T15	: FLT SEGMENT DRIVE OUTPUT/TIMING OUTPUT
20	RESET	83	- SEG31/T8	: FLT SEGMENT DRIVE OUTPUT/TIMING OUTPUT
30	OSC1	84	T0 - T7	: TIMING SPACE OUTPUT
31	OSC0	85	VFLT	: FLT DRIVING POWER SUPPLY



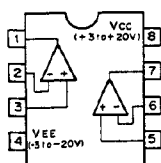
MSM6338MS-K (OKI)
CMOS DIGITAL AUDIO PEAK LEVEL DETECTOR
- TOP VIEW -



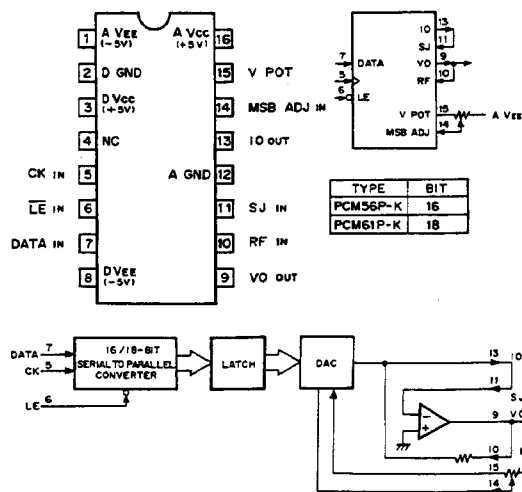
PALCE16V8H-25PC (AMD/MONOLITHIC MEMORIES)
CMOS ELECTRICALLY ERASABLE PROGRAMMABLE LOGIC DEVICE
- TOP VIEW -



NE5532P (TI)
LOW NOISE OPERATIONAL AMPLIFIER
- TOP VIEW -



PCM61P-S-2 (BURR-BROWN)
SERIAL INPUT D/A CONVERTER FOR DIGITAL AUDIO
- TOP VIEW -



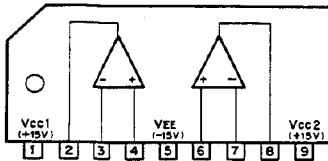
DATA : SERIAL DATA INPUT MSB FIRST
BINARY 2's COMPLEMENT
CK : CLOCK INPUT, $\bar{S}$
LE : LATCH ENABLE, $\bar{L}$
IO : CURRENT OUTPUT
SJ : SUMMING JUNCTION
VO : VOLTAGE OUTPUT
RF : FEEDBACK RESISTOR
VPOT : MSB TRIM POTENTIOMETER
MSB ADJ : MSB ADJUSTMENT

DIGITAL INPUT BTC (HEX)		ANALOG OUTPUTS		
PCM56P-K	PCM61P-K	DAC OUTPUT	VO (V)	IO (mA)
7FFF	7FFFFF	+FULL SCALE	+2.999908	-0.999970
8000	80003F	-FULL SCALE	-3.000000	+1.000000
0000	00003F	BIPOLAR ZERO	0.000000	0.000000
FFFF	FFFFF	ZERO-1LSB	-0.000092	+0.030500 μ A

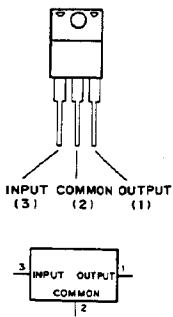
BTC : BINARY TWO'S COMPLEMENT

RC4556S (RAYTHEON)

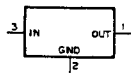
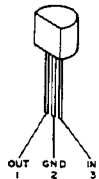
HIGH PERFORMANCE DUAL OPERATIONAL AMPLIFIER
- SIDE VIEW -



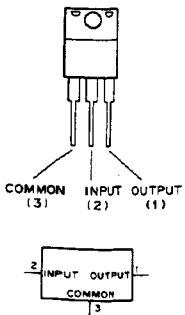
RC7805FA (RAYTHEON) + 5V
RC7815FA (RAYTHEON) + 15V
RC7818FA (RAYTHEON) + 18V
POSITIVE VOLTAGE REGULATOR
- FRONT VIEW -



RC78L05A (RAYTHEON) + 5V
POSITIVE VOLTAGE REGULATOR (100mA)

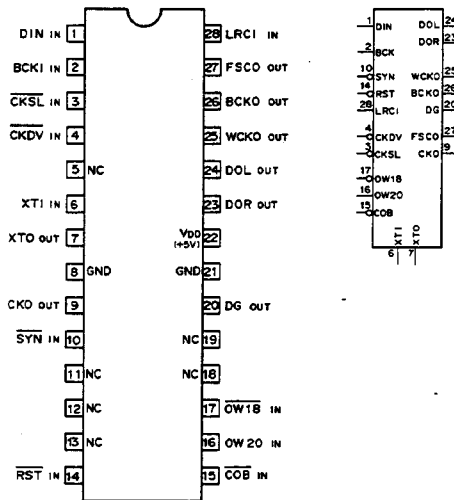


RC7905FA (RAYTHEON) - 5V
RC7915FA (RAYTHEON) - 15V
RC7918FA (RAYTHEON) - 18V
NEGATIVE VOLTAGE REGULATOR
- FRONT VIEW -



SM5813APS (NPC)

C-MOS AUDIO DIGITAL FILTER
- TOP VIEW -



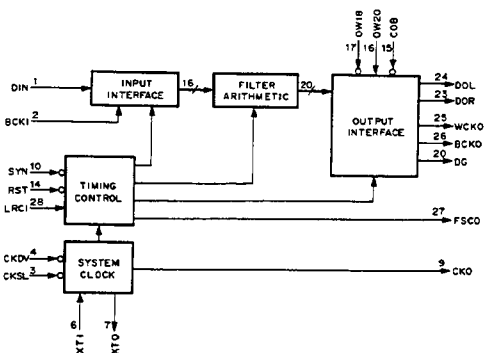
INPUT
BCKI : INPUT DATA BIT CLOCK
CKDV, CKSL : SYSTEM CLOCK SELECT
COB : 2'S COMPLEMENT/COB SELECT (H: 2'S COMPLEMENT, L: COB)
DIN : INPUT DATA
LRCI : SYSTEM CLOCK (H: L-CH, L: R-CH)
OW18, 20 : OUTPUT BIT NUMBER SELECT

OUTPUT BIT	16	18	20
OW18	H	L	H
OW20	H	H	L

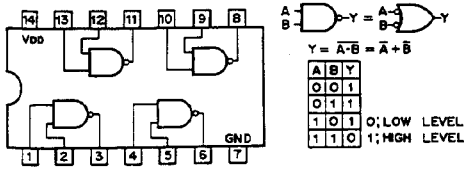
RST : SYSTEM RESET (H: NORMAL, L: SYSTEM RESET)
SYN : JITTER FREE/FORCED SYNCHRONIZATION SELECT
(H: JITTER FREE, L: FORCED SYNCHRONIZATION)
XTI : OSCILLATOR

XTI	125fs	256fs	384fs	512fs
CKSL	H	L	H	L
CKDV	H	H	L	L

OUTPUT
BCKO : OUTPUT DATA BIT CLOCK
CKO : SYSTEM CLOCK
DG : DEGLITCH CONTROL CLOCK
DOL, DOR : L/R DATA
FSCO : DATA SAMPLING CLOCK
WCKO : OUTPUT WORD CLOCK
XTO : OSCILLATOR



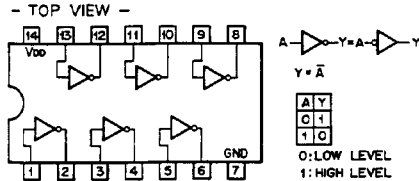
SN74HC00AN (TI)
SN74HC00ANS (TI) FLAT PACKAGE
CMOS QUAD 2-INPUT NAND GATES
- TOP VIEW -



NOTE:

TYPE	V _{DD}
TC74AC00 TYPE	+2 to +5.5V
MC74HCT00N	+5V
74ACT00 TYPE	+4.5 to +5.5V
OTHER TYPES	+2 to +6V

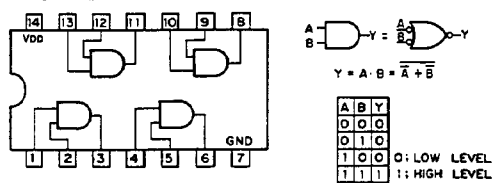
SN74HC04AN (TI)
SN74HC04ANS (TI) FLAT PACKAGE
SN74HC04ANS (TI) FLAT PACKAGE
CMOS HEX INVERTERS
- TOP VIEW -



NOTE:

TYPE	V _{DD}
74HCT04 TYPE	+5V
TC74AC04 TYPE	+2 to +5.5V
74ACT04 TYPE	+4.5 to +5.5V
OTHER TYPES	+2 to +6V

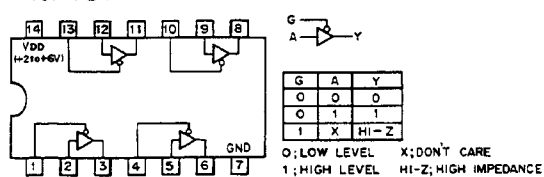
SN74HC08ANS (TI) FLAT PACKAGE
CMOS QUAD 2-INPUT AND GATES
- TOP VIEW -



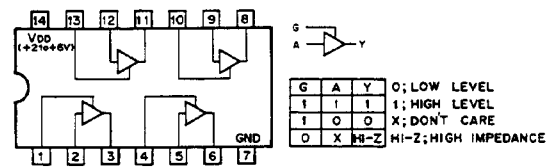
NOTE:

TYPE	V _{DD}
TC74AC08F	+2 to +5.5V
OTHER TYPES	+2 to +6V

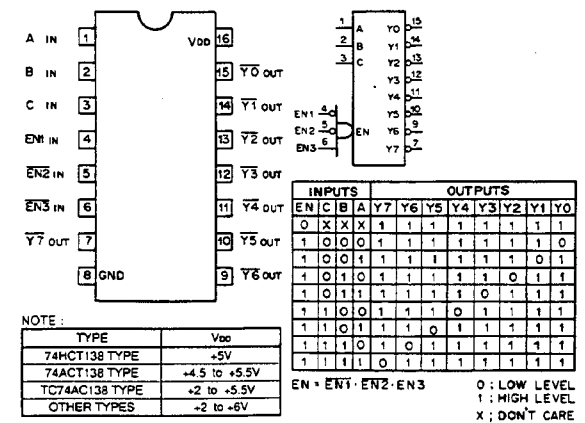
SN74HC125NS (TI) FLAT PACKAGE
CMOS BUS BUFFER GATES WITH 3-STATE OUTPUT
- TOP VIEW -



SN74HC126NS (TI) FLAT PACKAGE
CMOS BUS BUFFER GATE WITH 3-STATE OUTPUT
- TOP VIEW -



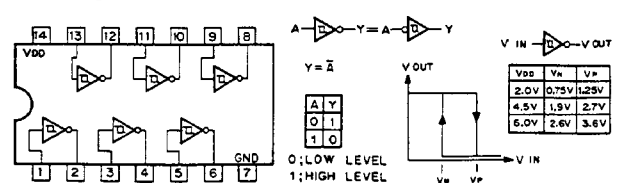
SN74HC138ANS (TI) FLAT PACKAGE
CMOS 3-TO-8 LINE DECODER/DEMULPLEXER
- TOP VIEW -



NOTE:

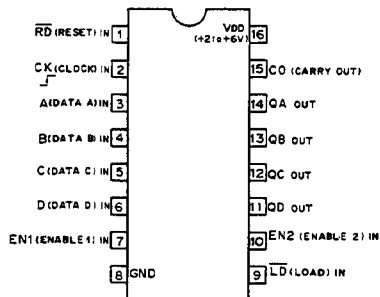
TYPE	V _{DD}
74HCT138 TYPE	+5V
74ACT138 TYPE	+4.5 to +5.5V
TC74AC138 TYPE	+2 to +5.5V
OTHER TYPES	+2 to +6V

SN74HC14ANS (TI) FLAT PACKAGE
CMOS HEX SCHMITT TRIGGER INVERTERS
- TOP VIEW -



NOTE:

TYPE	V _{DD}
TC74AC14 TYPE	+2 to +5.5V
OTHER TYPES	+2 to +6V

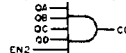
SN74HC161AN (TI) ($V_{DD} = +2$ to $+6V$)CMOS SYNCHRONOUS PRESETTABLE 4-BIT BINARY COUNTER
- TOP VIEW -

MODE SELECTION

CONTROL INPUTS	MODE
RD LD EN1 EN2	
0 X X X	RESET (ASYNCHRONOUS)
1 0 X X	PRESET (SYNCHRONOUS)
1 1 0 X	NO COUNT
1 1 X 0	NO COUNT
1 1 1 1	COUNT

0: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE

CARRY OUTPUT "CO"

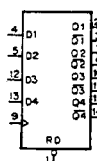
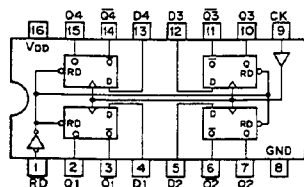


CO IS HIGH WHEN EN2 INPUT IS HIGH AND COUNT IS "15".

COUNT SEQUENCE

COUNT	QD	QC	QB	QA
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
10	1	0	1	0
11	1	0	1	1
12	1	1	0	0
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1

SN74HC175ANS (TI) FLAT PACKAGE

CMOS QUAD D-TYPE FLIP-FLOPS WITH RESET
- TOP VIEW -

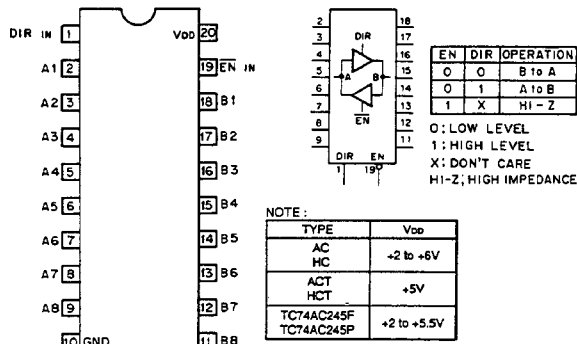
RD CK	Q1	Q2	Q3	Q4
0 X X 0 1	0	0	0	0
1 0 1 1 0	1	1	1	0
1 1 0 0 1	1	1	0	1
1 0 X 0 0	0	0	0	0

0: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE
Q0: NO CHANGE
Q0: NO CHANGE

NOTE:

TYPE	VDD
TC74AC175F	+2 to +5.5V
74ACT175 TYPE	+4.5 to +5.5V
OTHER TYPES	+2 to +6V

SN74HC245ANS (TI) FLAT PACKAGE

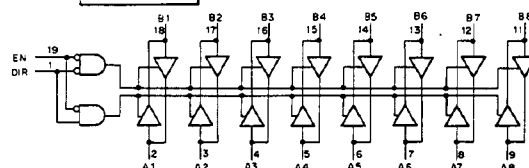
CMOS BILATERAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS
- TOP VIEW -

EN	DIR OPERATION
0	0 B to A
0	1 A to B
1	X HI-Z

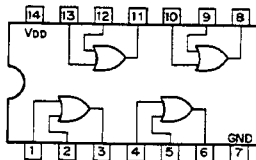
0: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE
HI-Z: HIGH IMPEDANCE

NOTE:

TYPE	VDD
AC HC	+2 to +6V
ACT HCT	+5V
TC74AC245F TC74AC245P	+2 to +5.5V



SN74HC32ANS (TI) FLAT PACKAGE

CMOS QUAD 2-INPUT OR GATES
- TOP VIEW -

$$Y = A + B = \overline{\overline{A} \cdot \overline{B}}$$

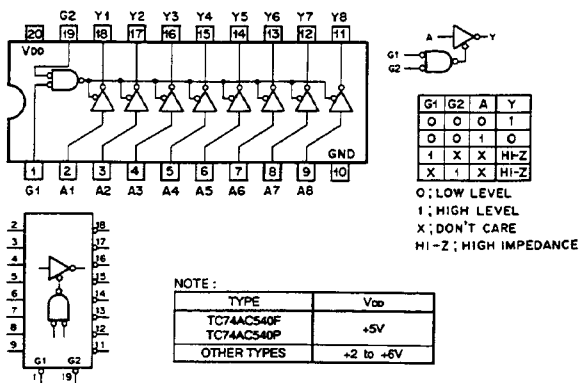
A	B	Y
0	0	0
0	1	1
1	0	1
1	1	1

0: LOW LEVEL
1: HIGH LEVEL

NOTE:

TYPE	VDD
TC74AC32 TYPE	+2 to +5.5V
OTHER TYPES	+2 to +6V

SN74HC540ANS (TI) FLAT PACKAGE

CMOS 3-STATE INVERTING BUFFER/LINE DRIVER/LINE RECEIVER
- TOP VIEW -

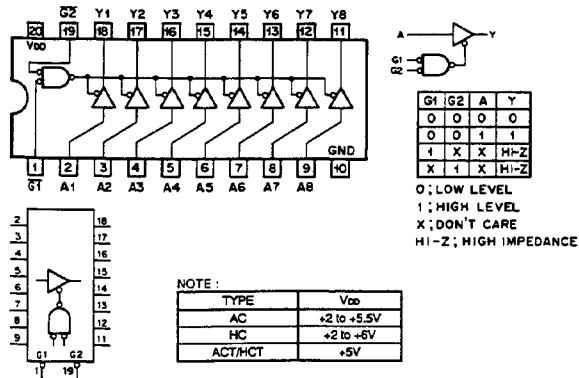
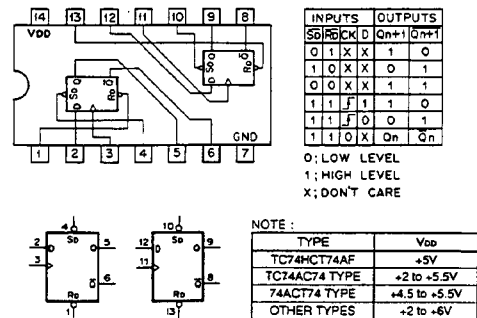
G1	G2	A	Y
0	0	0	1
0	0	1	0
1	X	X	HI-Z
X	1	X	HI-Z

0: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE
HI-Z: HIGH IMPEDANCE

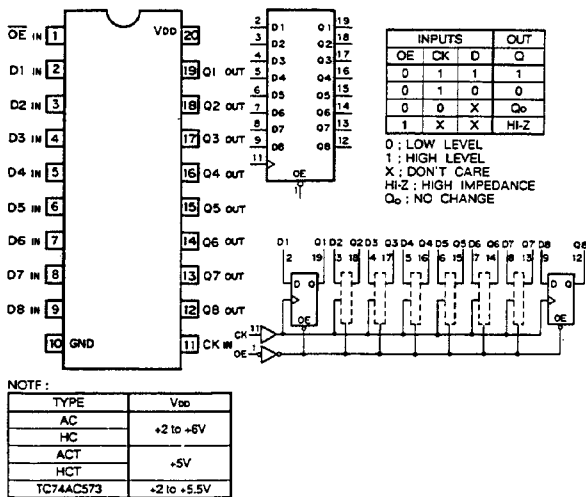
NOTE:

TYPE	VDD
TC74AC540F TC74AC540P	+5V
OTHER TYPES	+2 to +6V

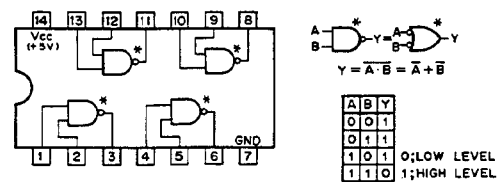
SN74HC541ANS (TI) FLAT PACKAGE

C-MOS BUFFERS AND LINE DRIVERS WITH 3-STATE OUTPUTS
- TOP VIEW -SN74HC74AN (TI)
SN74HC74ANS (TI) FLAT PACKAGEC-MOS DUAL D-TYPE FLIP-FLOPS WITH DIRECT SET/RESET
- TOP VIEW -

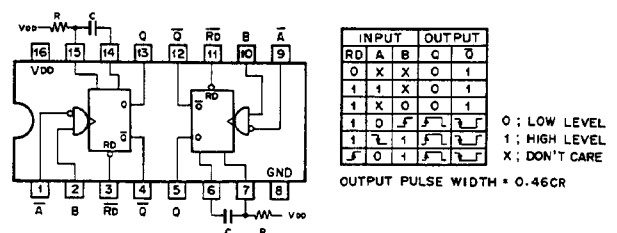
SN74HC573BNS (TI) FLAT PACKAGE

C-MOS 3-STATE OUTPUTS OCTAL LATCHES
- TOP VIEW -

SN74LS03NS (TI) FLAT PACKAGE

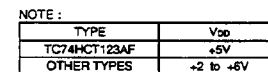
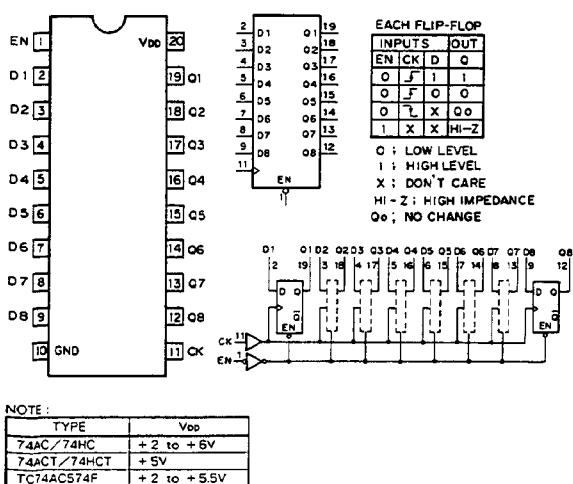
TTL 2-INPUT POSITIVE-NAND GATE WITH OPEN-COLLECTOR
- TOP VIEW -

TC74HC123AF (TOSHIBA) FLAT PACKAGE

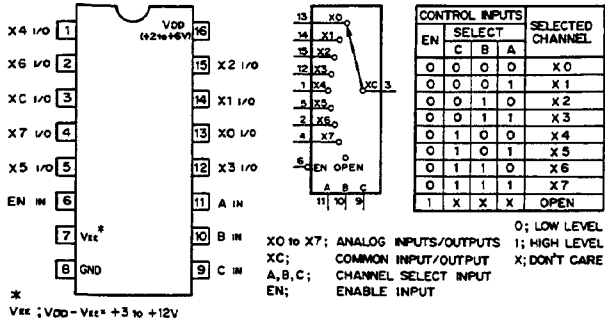
C-MOS DUAL RETRIGGERABLE MONOSTABLE MULTIVIBRATORS
- TOP VIEW -

SN74HC574ANS (TI) FLAT PACKAGE

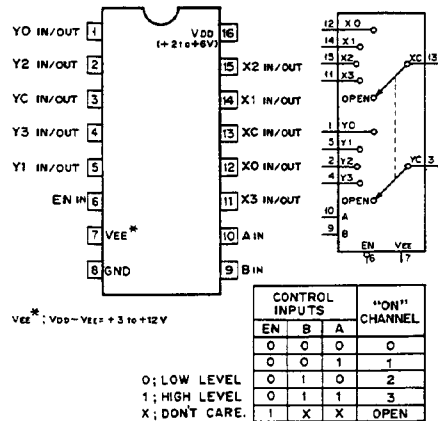
TC74HC574F (TOSHIBA) FLAT PACKAGE

C-MOS 3-STATE D-TYPE EDGE-TRIGGERED FLIP-FLOP
- TOP VIEW -

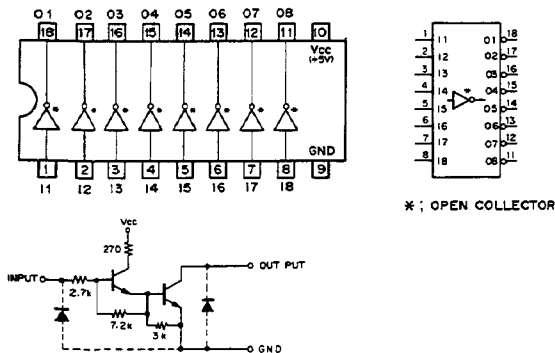
TC74HC4051AF (MOTOROLA) FLAT PACKAGE

C-MOS 8-CHANNEL ANALOG MULTIPLEXER/DEMULTIPLEXER
- TOP VIEW -

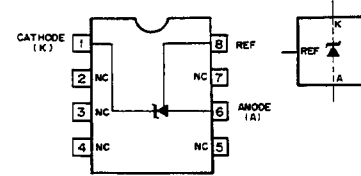
TC74HC4052AF (TOSHIBA) FLAT PACKAGE

C-MOS DUAL 4-CHANNEL ANALOG MULTIPLEXER/DEMULTIPLEXER
- TOP VIEW -

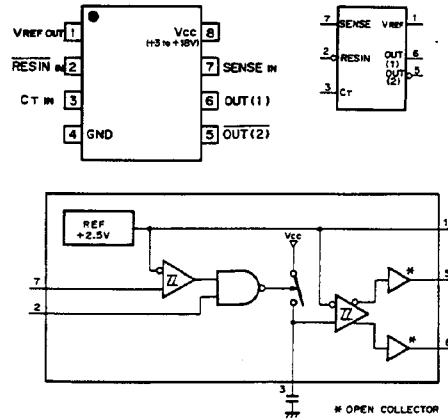
TD62381P (TOSHIBA)

OCTAL LOW SATURATION DRIVER
- TOP VIEW -

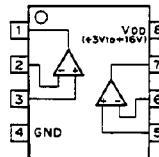
TL431CPS (TI) FLAT PACKAGE

ADJUSTABLE PRECISION SHUNT REGULATOR
- TOP VIEW -

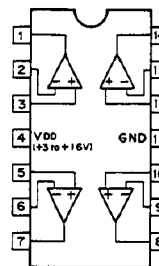
TL7705ACPS (TI) FLAT PACKAGE

TL7705CPS-B (TI) FLAT PACKAGE
POWER VOLTAGE SUPERVISOR
- TOP VIEW -

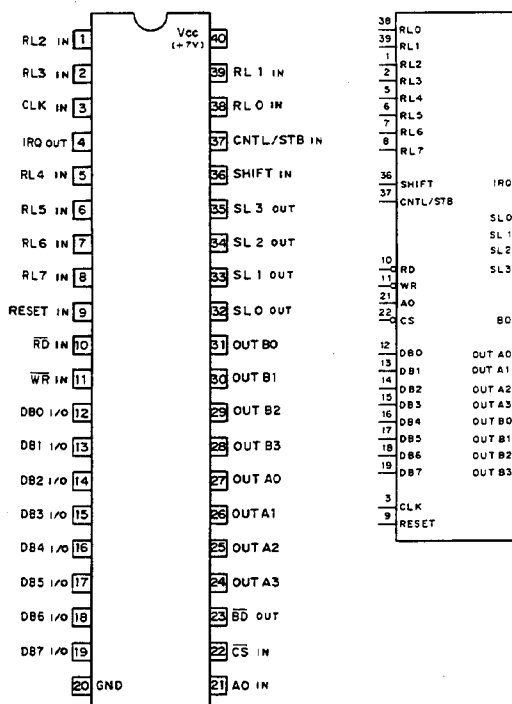
TLC272CPS (TI) FLAT PACKAGE

OPERATIONAL AMPLIFIER
- TOP VIEW -

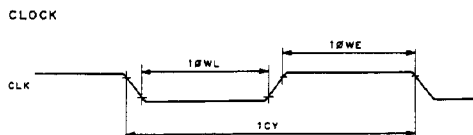
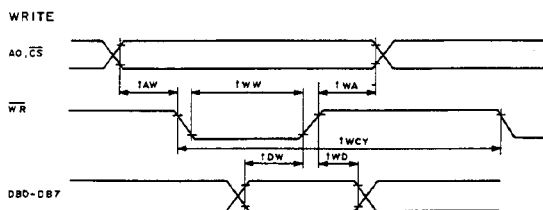
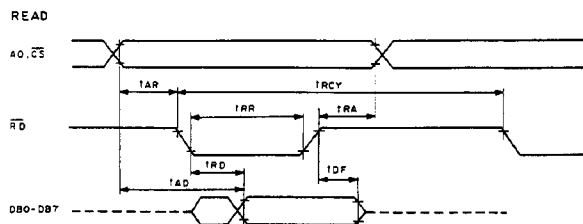
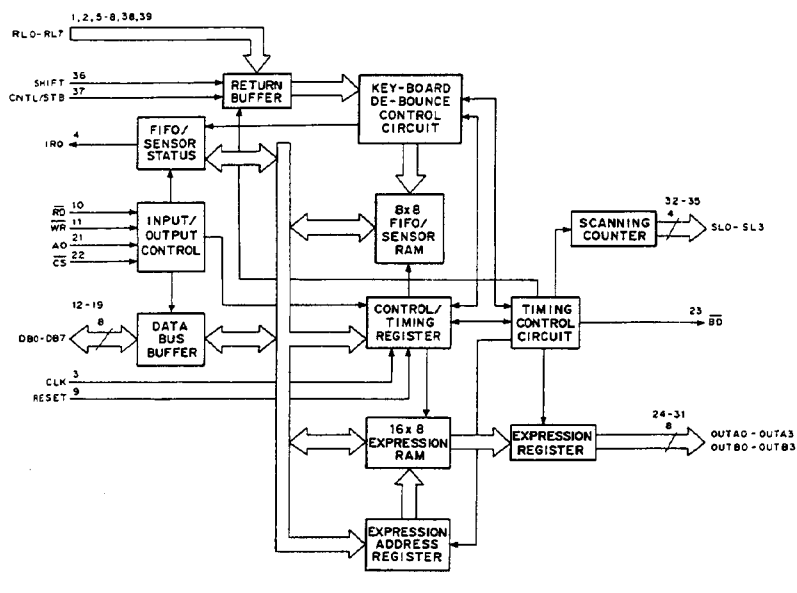
TLC274CNS (TI) FLAT PACKAGE

C-MOS OPERATIONAL AMPLIFIER
- TOP VIEW -

TMP82C79P-2 (TOSHIBA)

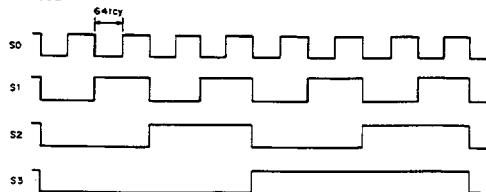
CMOS PROGRAMMABLE KEY-BOARD/DISPLAY INTERFACE DEVICE
- TOP VIEW -

AO : COMMAND/DATA CONTROL INPUT
 BD : DISPLAY BLANKING OUTPUT
 CLK : CLOCK INPUT
 CNTL/STB : CONTROL/STROBE INPUT
 CS : CHIP SELECT INPUT
 DB0-DB7 : DATA BUS INPUT/OUTPUT
 IRQ : INTERRUPT REQUEST OUTPUT
 OUT A0-A3 : 16x4 BIT EXPRESSION REFRESH REGISTER
 OUT B0-B3 :
 RD : READ STROBE INPUT
 RESET : RESET INPUT
 RLO-RL7 : RETURN LINE INPUT
 SHIFT : SHIFT INPUT
 SLO-SL3 : SCANNING LINE OUTPUT
 WR : WRITE STROBE INPUT

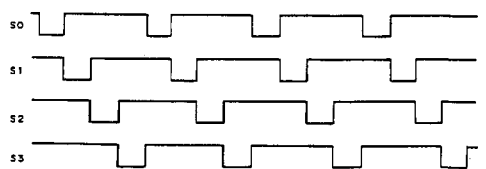


SCANNING

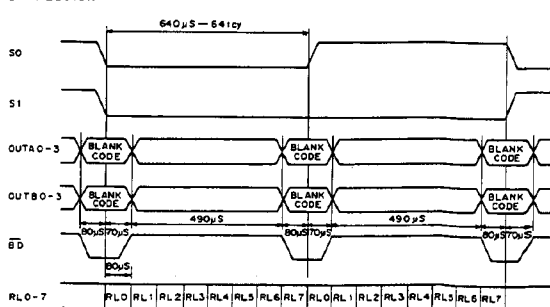
ENCODE



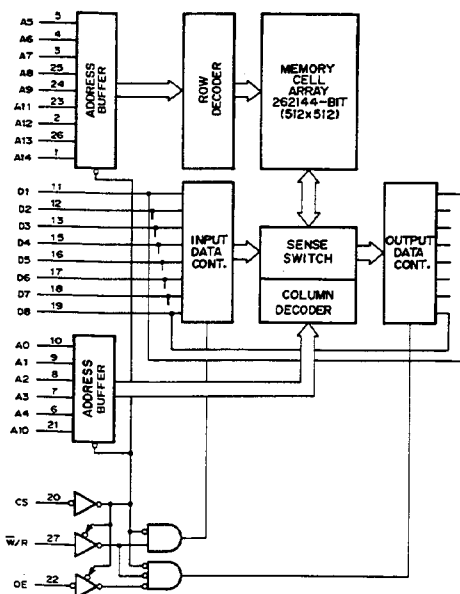
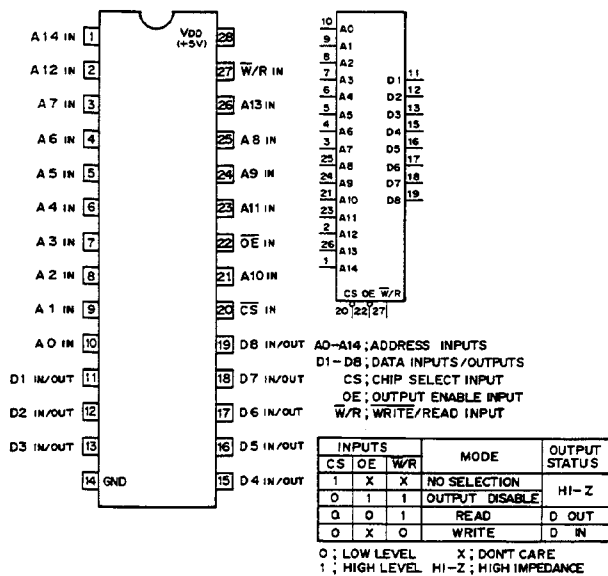
DECODE



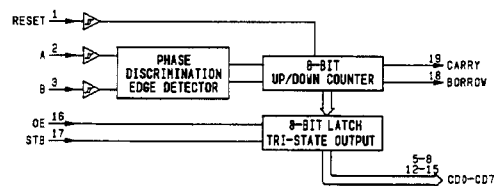
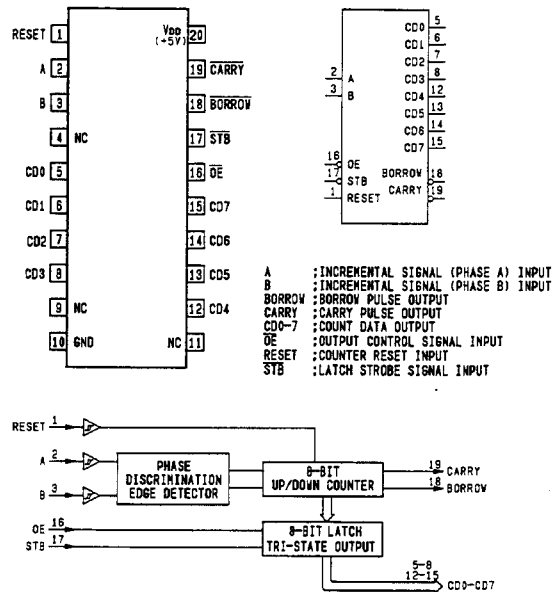
EXPRESSION



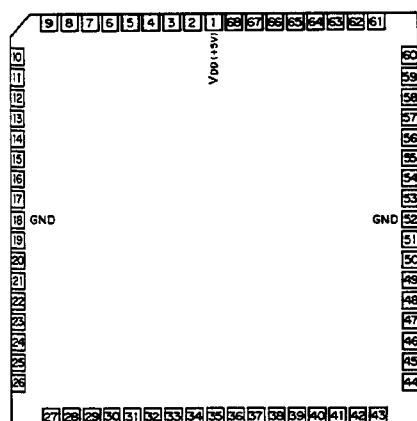
UPD43256AGU-10LL (NEC)

C-MOS 262144-BIT (32768x8) STATIC RAM
- TOP VIEW -

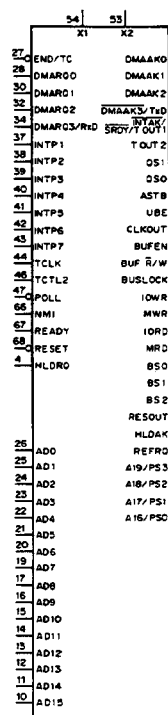
UPD4702G (NEC)

C-MOS INCREMENTAL ENCODER 8BIT UP DOWN COUNTER
- TOP VIEW -

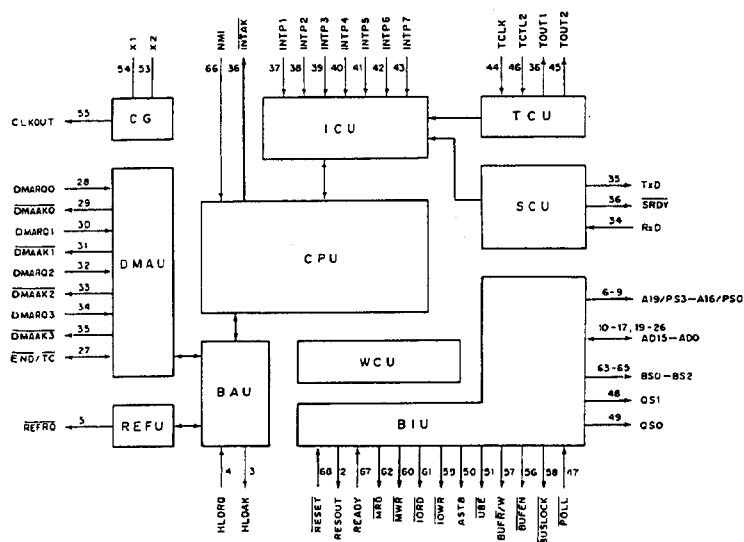
UPD70216L-10 (NEC) (CLOCK FREQUENCY: 10MHz)
C-MOS 16 BIT MICROPROCESSOR
- TOP VIEW -



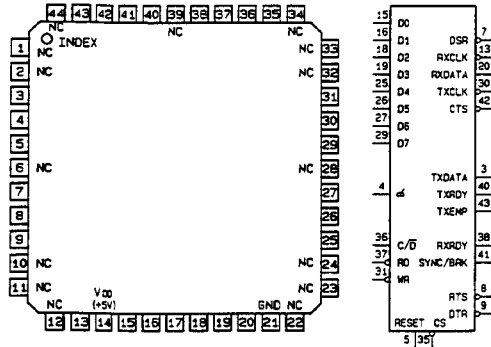
PIN NO.	FUNCTION	PIN NO.	FUNCTION	PIN NO.	FUNCTION	PIN NO.	FUNCTION
1	VDD(+5V)	18	GND	35	DMAAK3/TxD	52	GND
2	RES OUT	19	AD7	36	INTAK/SRDY/OUT1	53	X 2
3	HLDK	20	AD6	37	INTP 1	54	X 1
4	HLDQ	21	AD5	38	INTP 2	55	CLK OUT
5	REFRQ	22	AD4	39	INTP 3	56	BUFEN
6	A19/PS3	23	AD3	40	INTP 4	57	BUF R/W
7	A18/PS2	24	AD2	41	INTP 5	58	BUSLOCK
8	A17/PS1	25	AD1	42	INTP 6	59	IOWR
9	A16/PS0	26	AD0	43	INTP 7	60	MWR
10	AD15	27	END/TC	44	TCLK	61	IORD
11	AD14	28	DMAK0	45	TOUT2	62	MRD
12	AD13	29	DMAK1	46	TCTL2	63	BS0
13	AD12	30	DMAK2	47	POLL	64	BS1
14	AD11	31	DMAK3	48	Q51	65	BS2
15	AD10	32	DMAK4	49	Q50	66	NMI
16	AD9	33	DMAK5	50	ASTB	67	READY
17	AD8	34	DMAK6	51	UBE	68	RESET



A16/PS0-A19/PS3 (O) ; ADDRESS/PROCESSOR STATUS
AD0-AD15 (I/O) ; ADDRESS BUS/DATA BUS
ASTB (O) ; ADDRESS STROBE
BS0-BS2 (O) ; BUS STATUS
BUFEN (O) ; BUFFER ENABLE
BUF R/W (O) ; BUFFER READ/WRITE
BUSLOCK (O) ; BUS LOCK
CLKOUT (O) ; CLOCK OUTPUT
DMAK0-2 (O) ; DMA ACKNOWLEDGE 0-2
DMAK3/TxD (O) ; DMA ACKNOWLEDGE3/TRANSMIT DATA
DMAK4-2 (I) ; DMA REQUEST 0-2
DMAK5/RxD (I) ; DMA REQUEST/RECEIVE DATA
END/TC (I/O) ; END/TERMINAL COUNT
HLDK (O) ; BUS HOLD ACKNOWLEDGE
HLDQ (I) ; BUS HOLD REQUEST
INTAK/SRDY/TOUT1 (O) ; INTERRUPT ACKNOWLEDGE/SERIAL
INTP0-INTP7 (I) ; INTERRUPT REQUEST FROM PERIPHERAL 0-7
IORD (O) ; I/O READ STROBE
IOWR (O) ; I/O WRITE STROBE
MRD (O) ; MEMORY READ STROBE
MWR (O) ; MEMORY WRITE STROBE
NMI (I) ; NON MASKABLE INTERRUPT
POLL (I) ; POLL
Q50, Q51 (O) ; QUEUE STATUS
READY (I) ; READY
REFRQ (O) ; REFRESH REQUEST
RESET (I) ; RESET
RES OUT (O) ; SYSTEM RESET
TCLK (I) ; TIMER CLOCK
TCTL2 (I) ; TIMER CONTROL 2
TOUT2 (O) ; TIMER OUT 2
UBE (O) ; UPPER BYTE ENABLE
X1, X2 (I) ; CRYSTAL 1,2



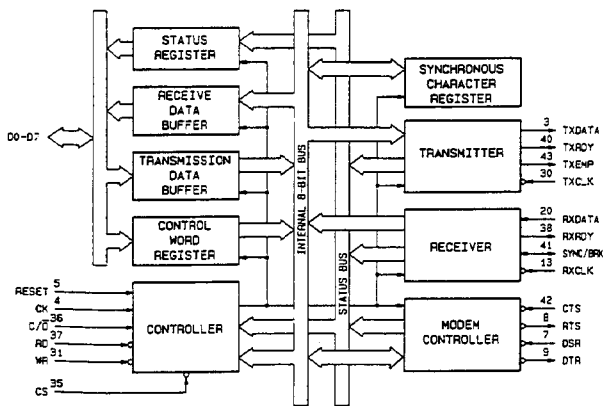
UPD71051GB-10-3B4 (NEC) FLAT PACKAGE
C-MOS SERIAL CONTROLLER
- TOP VIEW -



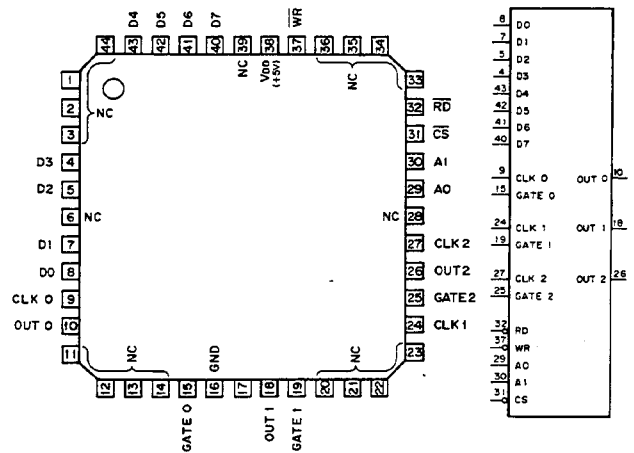
PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL	PIN NO.	I/O	SYMBOL
1	—	NC	12	—	NC	23	—	NC	34	—	NC
2	—	NC	13	I	RXCLK	24	—	NC	35	I	CS
3	O	TXDATA	14	—	VDD (+5V)	25	I/O	D4	36	I	C/D
4	I	CK	15	I/O	D0	26	I/O	D5	37	I	RD
5	I	RESET	16	I/O	D1	27	I/O	D6	38	O	RXRDY
6	—	NC	17	—	IC	28	—	NC	39	—	NC
7	I	DSR	18	I/O	D2	29	I/O	D7	40	O	TXRDY
8	O	RTS	19	I/O	D3	30	I	TXCLK	41	I/O	SYNC/BRK
9	O	DTR	20	I	RXDATA	31	I	WR	42	I	CTS
10	—	NC	21	—	GND	32	—	NC	43	O	TXEMP
11	—	NC	22	—	NC	33	—	NC	44	—	NC

CS : CHIP SELECT INPUT
CTS : CLEAR TO SEND OUTPUT
C/D : CONTROL/DATA SELECT INPUT
D0-D7 : DATA INPUTS/OUTPUTS
DSR : DATA SET READY INPUT
DTR : DATA TERMINAL READY OUTPUT
TXCLK : TRANSMITTER CLOCK INPUT
TXDATA : TRANSMIT DATA OUTPUT
TXEMP : TRANSMITTER EMPTY OUTPUT

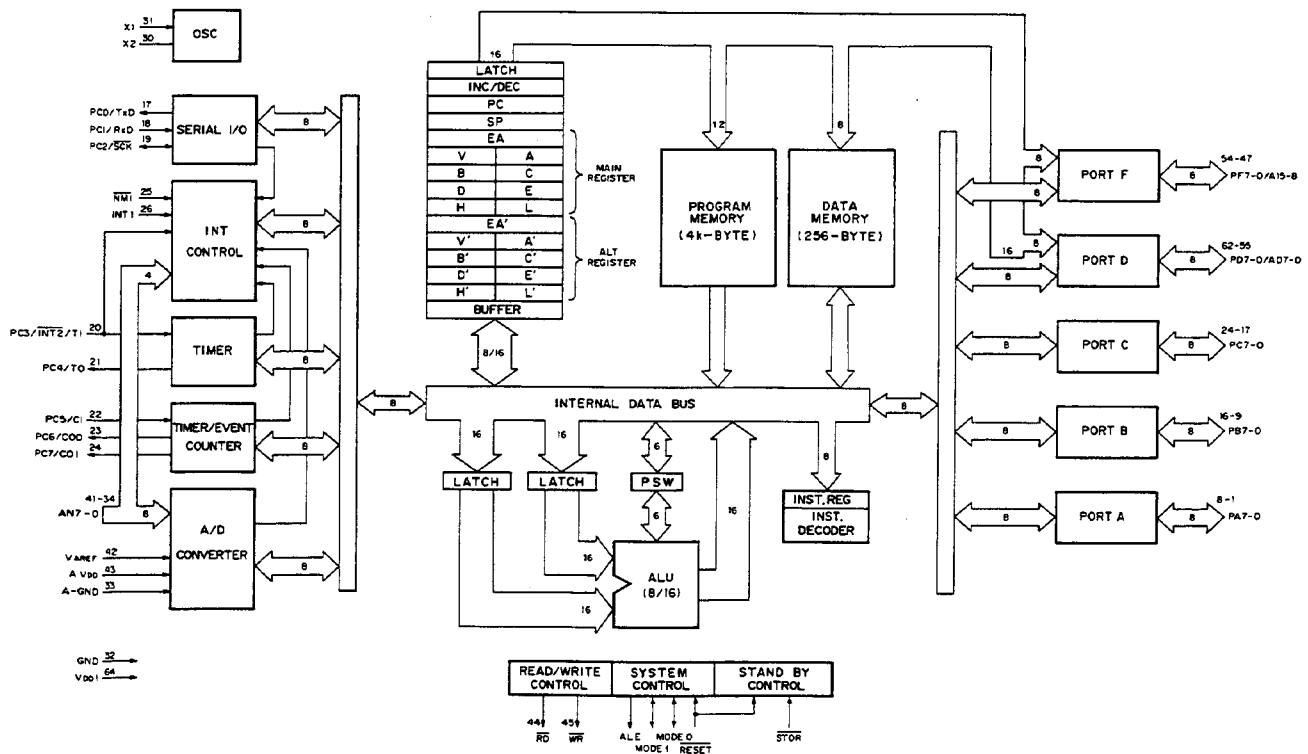
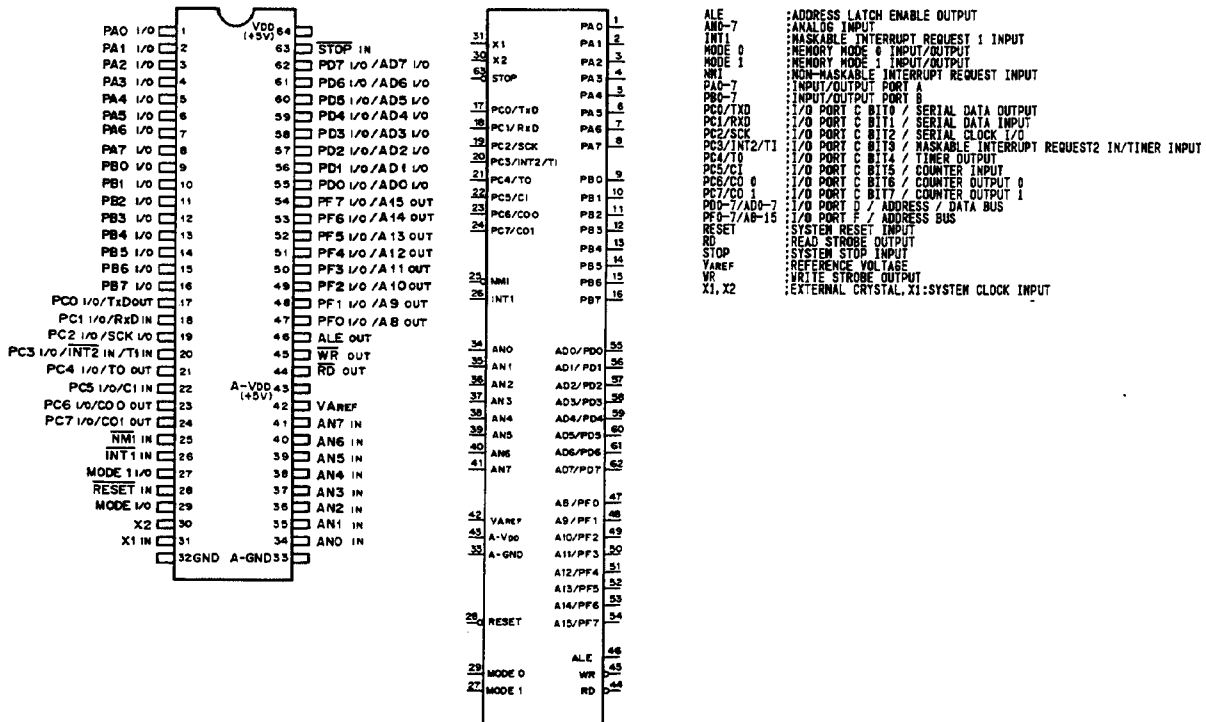
TXRDY : TRANSMIT READY OUTPUT
RD : READ STROBE INPUT
RESET : RESET INPUT
RTS : REQUEST TO SEND OUTPUT
RXCLK : RECEIVER CLOCK INPUT
RXDATA : RECEIVER DATA INPUT
RXRDY : RECEIVER READY OUTPUT
SYNC/BRK : SYNCHRONIZATION/BREAK INPUT/OUTPUT
WR : WRITE STROBE INPUT



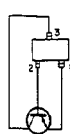
UPD71054GB-10-3B4 (NEC) FLAT PACKAGE
C-MOS PROGRAMMABLE TIMER COUNTER
- TOP VIEW -



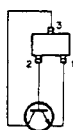
UPD78C11ACW-F08 (NEC)

C-MOS SINGLE CHIP 8-BIT MICROPROCESSOR WITH A/D CONVERTER
- TOP VIEW -

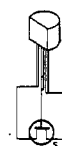
TRANSISTOR



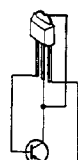
2SA1162Y



2SC2712Y



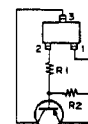
2SK170



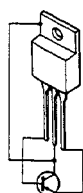
2SA1242



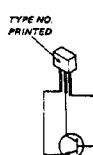
2SC2855



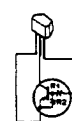
DTA114EK (R1 = 10K, R2 = 10K)
DTA143EK (R1 = 4.7K, R2 = 4.7K)
DTA143TK (R1 = 4.7K, R2 = ∞)



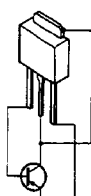
2SA985A



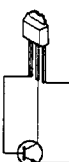
2SD1020



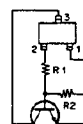
DTA124ES (R1 = 22K, R2 = 22K)



2SB1040A
2SB906



2SD1221



DTC124EK (R1 = 22K, R2 = 22K)
DTC143TK (R1 = 4.7K, R2 = ∞)



2SC2275A



2SD1266



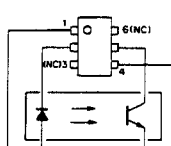
DTC124ES (R1 = 22K, R2 = 22K)
DTC143TS (R1 = 4.7K, R2 = OPEN)



2SC2458



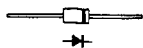
2SD773



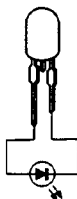
PS2604

DIODE

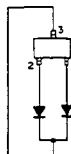
DIODE



10E-2
10E2N
1SS119
RK14
SLR-34PG5



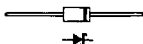
TLY256 : YELLOW



1S2837



BR3432S : RED
EBG3432S : GREEN
EBG5734S : GREEN
PY3432S : YELLOW
PYS734S : YELLOW



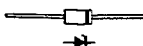
ERA81-004
ERC81-004



FC52M
FC53M



GL-3HY8 : YELLOW
TLG124A : GREEN
TLR124 : RED
TLUG164 : GREEN
TLUR164 : RED
TLUY164 : YELLOW



HZ ? ? A ?
HZS ? ? L
RD ? ? EB ?
RD ? ? ESB ?

SECTION E

REPLACEABLE PARTS

E-1. PARTS ORDERING INFORMATION

Standardization of Parts

Repair parts supplied from Sony Parts Center may not be always identical with the part which actually in use due to "accommodating the improved parts and/or engineering changes" or "standardization of genuine parts".

This manual's exploded views and electrical parts list are indicating the parts numbers of the "standardized genuine parts at present".

Parts marked with S in the column of SP

These parts are normally stocked as replaceable parts.

Parts marked with O in the column of SP

Orders for these parts will be processed, but allow for additional delivery time.

Parts without Part No.

These parts are not stocked because they are seldom required for routine service.

The components marked with $\triangle$ are critical to safe operation.

These components must be replaced with the same ones as described on the Parts List.

ORNAMENTAL CASE

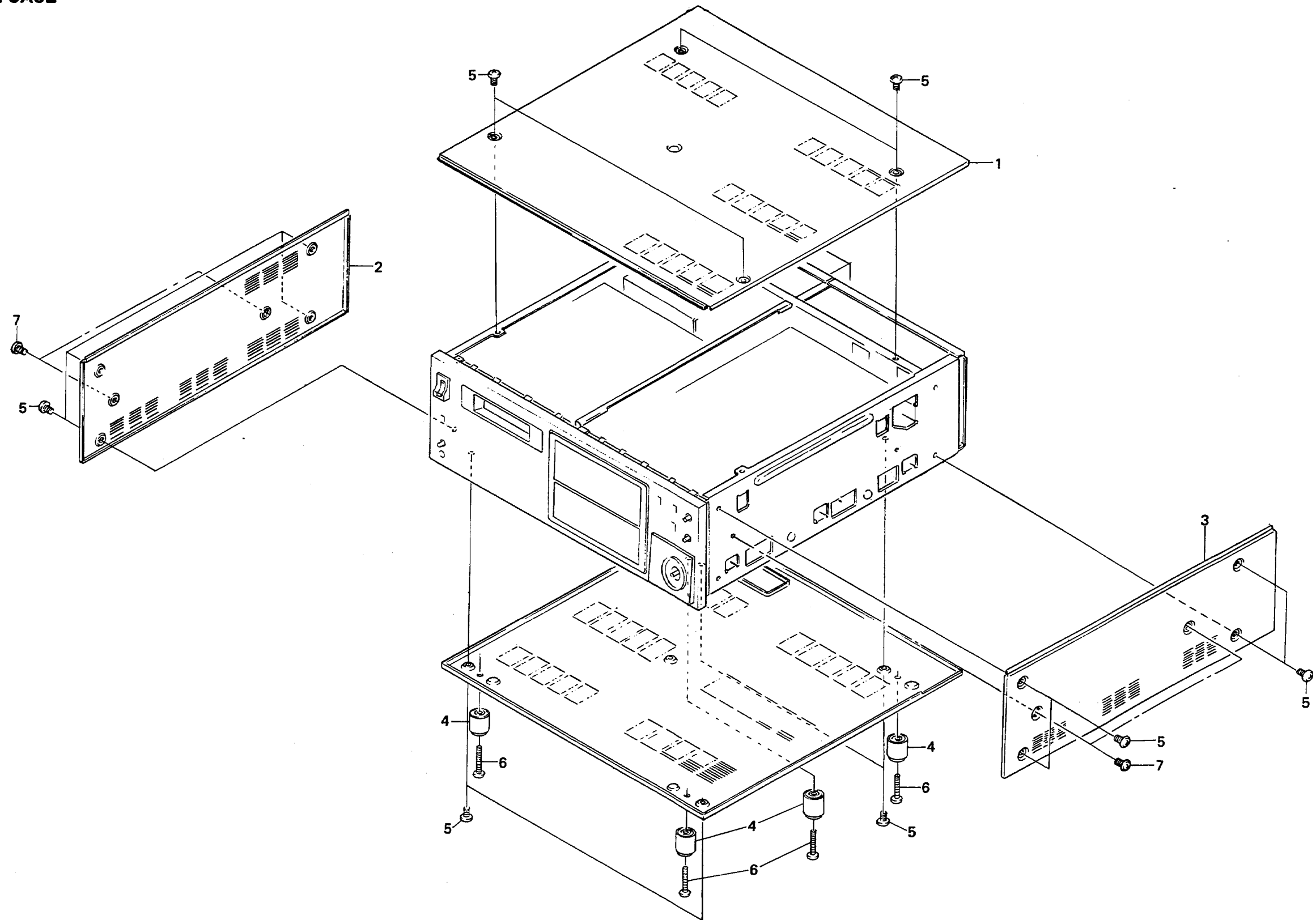
E-2. EXPLODED VIEWS AND PARTS

Index

No.	Parts No.	SP Description
1	X-3167-094-1	O LID, UPPER ASSY
2	X-3167-096-1	O PLATE(L), SIDE ASSY
3	X-3167-095-1	O PLATE(R), SIDE ASSY
4	3-346-656-01	S FOOT
5	7-682-560-04	S SCREW +B 4X6
6	7-682-566-04	S SCREW +B 4X20
7	7-682-562-04	S SCREW +B 4X10

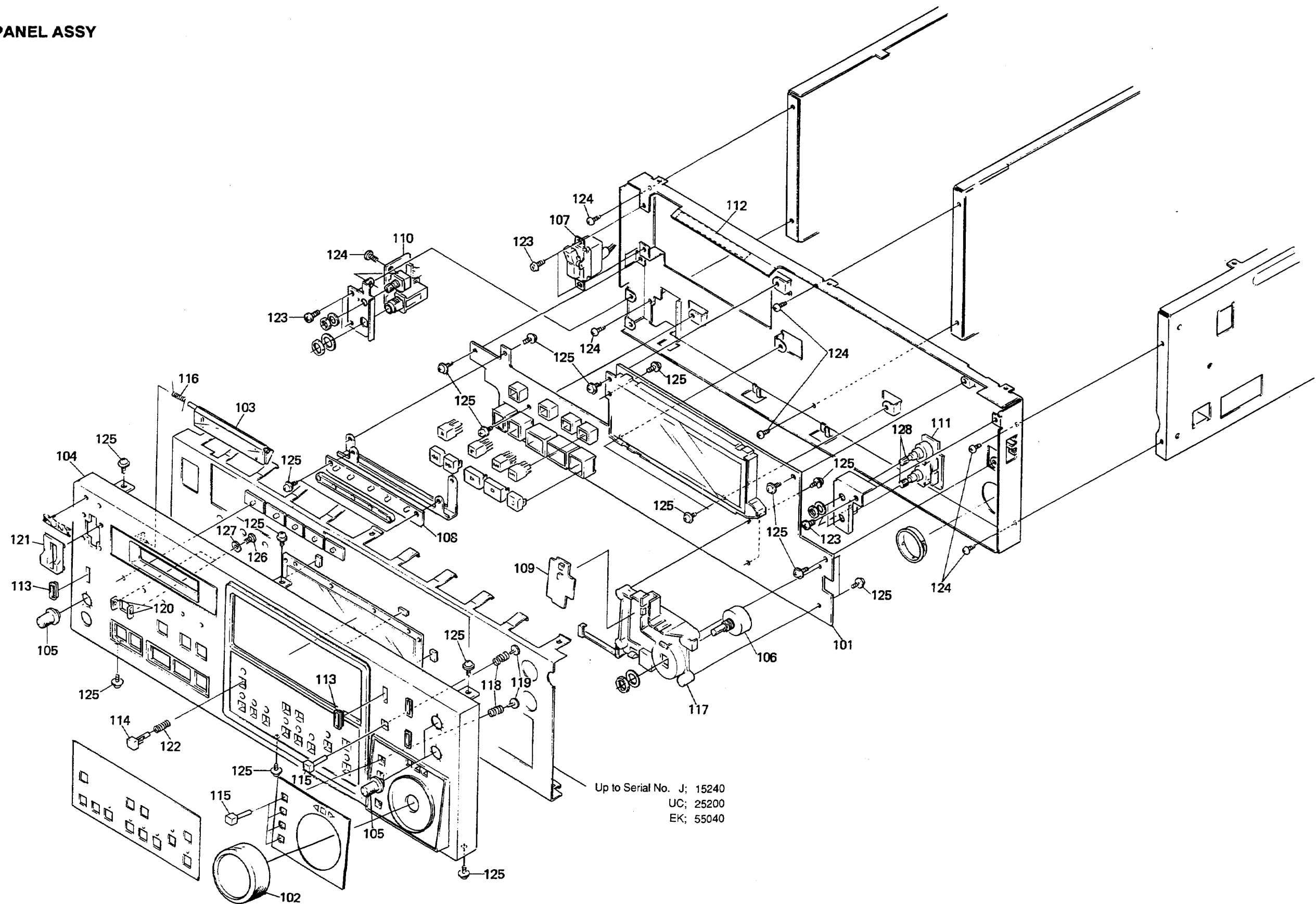
ORNAMENTAL CASE ORNAMENTAL CASE

ORNAMENTAL CASE



FRONT PANEL ASSY FRONT PANEL ASSY

FRONT PANEL ASSY



E-5

E-6

PCM-7030 (J,UC,EK)

Index

No.	Parts No.	SP Description
101	A-7850-797-A	o COMPLETE PCB, KY-192
102	X-3165-315-3	s DIAL ASSY
103	X-3165-508-5	o DOOR ASSY, CASSETTE
104	X-3165-510-3	o PANEL ASSY, FRONT
105	X-3717-237-1	s KNOB ASSY, VOL
106	1-466-469-11	s ROTARY ENCORDER (MAGNETIC)
107	1-570-117-21	s SWITCH, SEESAW (AC POWER)
108	1-637-269-11	o PC BOARD, LED-104
109	1-637-270-11	o PC BOARD, SW-420
110	1-637-283-14	o PC BOARD, HP-48
111	1-637-284-13	o PC BOARD, VR-109
112	3-166-920-01	o MIRROR (CHASSIS)
113	3-166-928-02	o ESCUTCHEON, SW
114	3-166-929-01	o KEY TOP (LARGE)
115	3-166-930-01	o KEY TOP (SMALL)
116	3-167-801-01	o SPRING, TENSION
117	3-167-806-02	o TABLE, ENCORDER
118	3-567-099-00	o SPRING, COMPRESSION
119	3-668-009-02	s PIN, PUSH BUTTON
120	3-717-380-11	o GUARD, REC
121	4-378-341-01	o COVER, SWITCH
122	4-862-354-00	s SPRING, COMPRESSION
123	7-682-546-09	s SCREW +B 3x5 (Up to Serial No. J;15140, UC;25180, EK;55040)
	7-682-903-11	s SCREW +PWH3x6 (Serial No. J;15141 and higher, UC;25181 and higher, EK;55041 and higher)
124	7-682-547-04	s SCREW +B 3x6
125	7-682-903-11	s SCREW +PWH 3x6
126	7-685-105-19	s TPG +P 2x8
127	7-688-001-01	s W2, MIDDLE
128	1-241-332-11	s RES, VAR, CARBON 20K

MAIN ASSY(1)

Index

No.	Parts No.	SP	Description
201	A-7806-080-C	s	DATM-06R ASSY
202	A-7810-551-A	s	CASSETTE COMPARTMENT ASSY
203	A-7850-783-A	o	COMPLETE PCB, DR-139
204	A-7850-813-A	o	COMPLETE PCB, SV-123
205	A-7850-815-A	o	COMPLETE PCB, PS-211
206	A-7850-817-A	o	COMPLETE PCB, DC-47
△207	1-450-293-11	s	TRANSFORMER, POWER
208	1-637-285-12	o	PC BOARD, LE-90A
209	1-637-286-12	o	PC BOARD, LE-90B
210	3-570-118-00	s	CUSHION, MOTOR
211	4-818-403-00	s	RIVET, NYLON
212	7-682-546-09	s	SCREW +B 3x5
213	7-682-547-04	s	SCREW +B 3x6
214	7-682-560-04	s	SCREW +B 4x6
215	7-682-903-11	s	SCREW +PWH 3x6
216	8-719-820-27	s	DIODE TLY256
[DABK-7030]			
217	A-7850-764-A	o	COMPLETE PCB, TC-58 (For J,UC)
	A-7850-765-A	o	COMPLETE PCB, TC-58P (For EK)
218	7-682-903-11	s	SCREW, +PWH 3x6

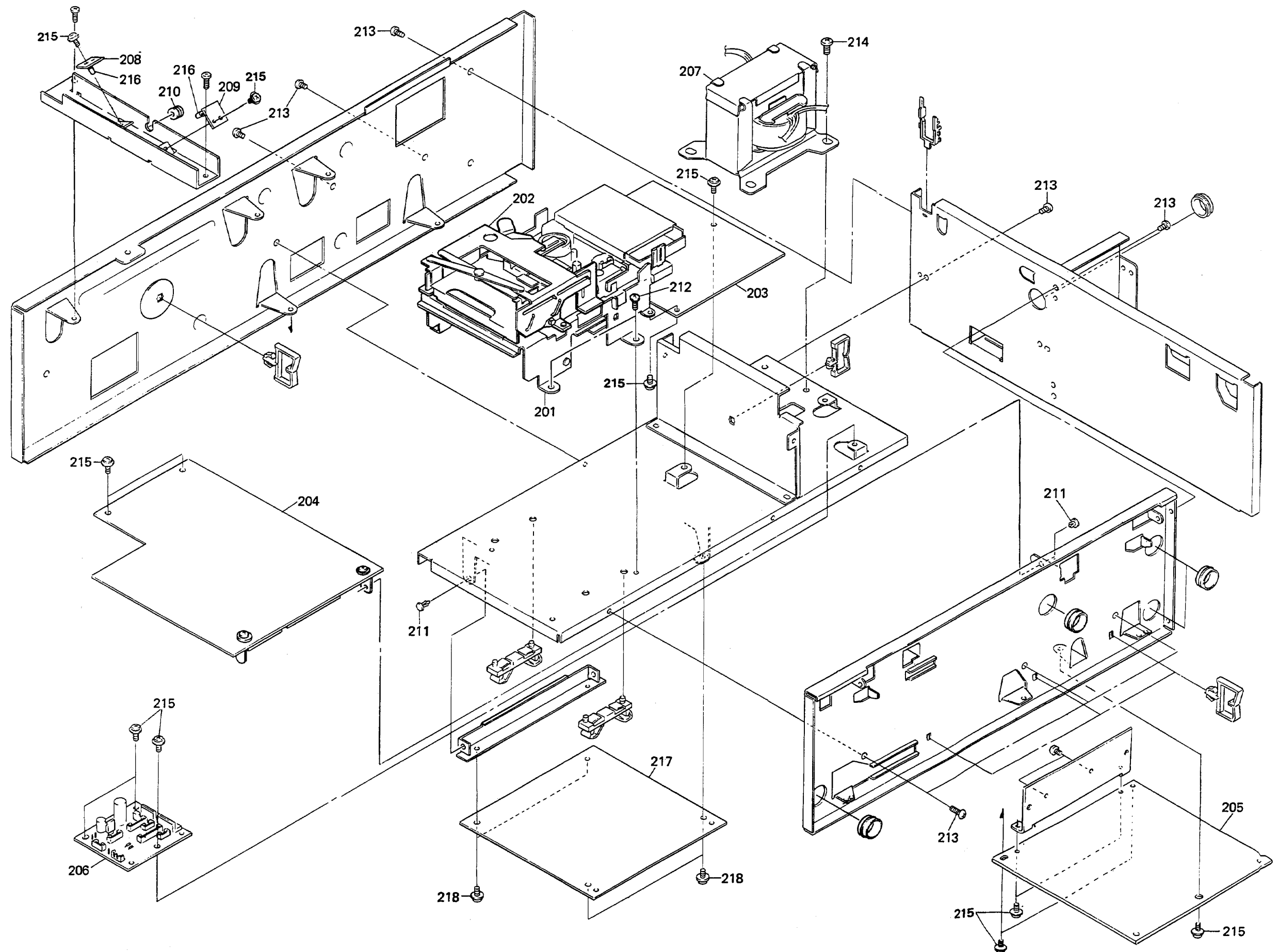
注 意; (201)は、E-19ページの(606)、(619)、(620)、(624)を含んでいません。

NOTE; (201) does not include (606), (619), (620) and (624) on page E-19.

MAIN ASSY(1)

MAIN ASSY(1)

MAIN ASSY(1)



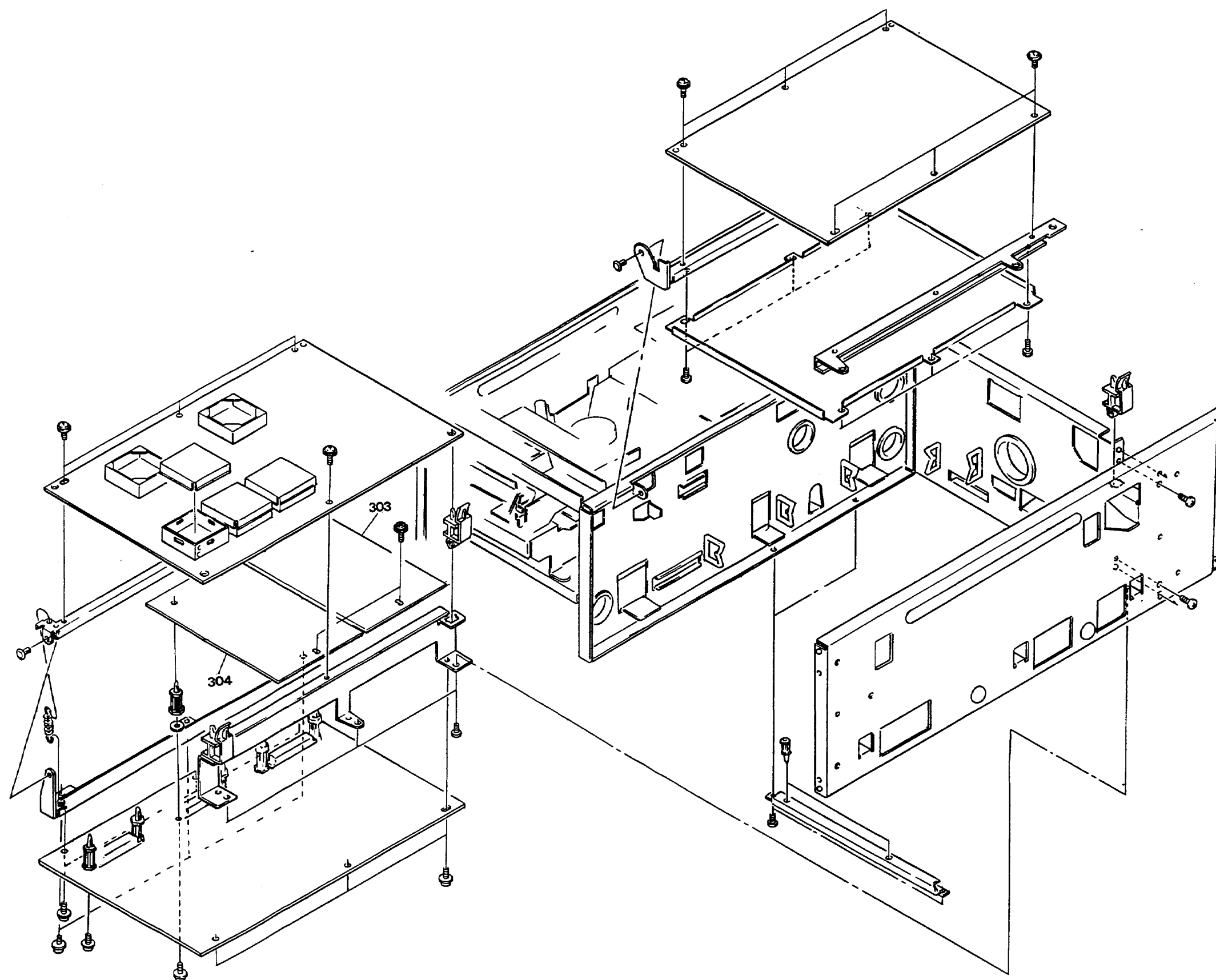
PCM-7030 (J,UC,EK)

E-9

E-10

MAIN ASSY(2) MAIN ASSY(2)

MAIN ASSY(2)



E-11

E-12

PCM-7030 (J,UC,EK)

Index

No.	Parts No.	SP	Description
301	A-7850-803-B	s	COMPLETE PCB, ADA-18
302	A-7850-805-A	s	COMPLETE PCB, SP-13
303	A-7850-848-A	s	COMPLETE PCB, SY-155B
306	1-590-307-11	s	WIRE, FLEXIBLE CARD (20P)
307	3-437-289-11	s	SPRING, TENSION
308	3-703-141-00	o	HOLDER, PCB
309	4-818-403-00	s	RIVET, NYLON
310	4-861-614-11	s	HOLDER, PC BOARD
311	7-682-546-09	s	SCREW +B 3x5
312	7-682-547-04	s	SCREW +B 3x6
313	7-682-903-11	s	SCREW +PWH 3x6

[DABK-7031]

304	A-7850-809-A	s	COMPLETE PCB, DIO-10
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[DABK-7032]

305	A-7850-762-A	s	COMPLETE PCB, MEM-40B
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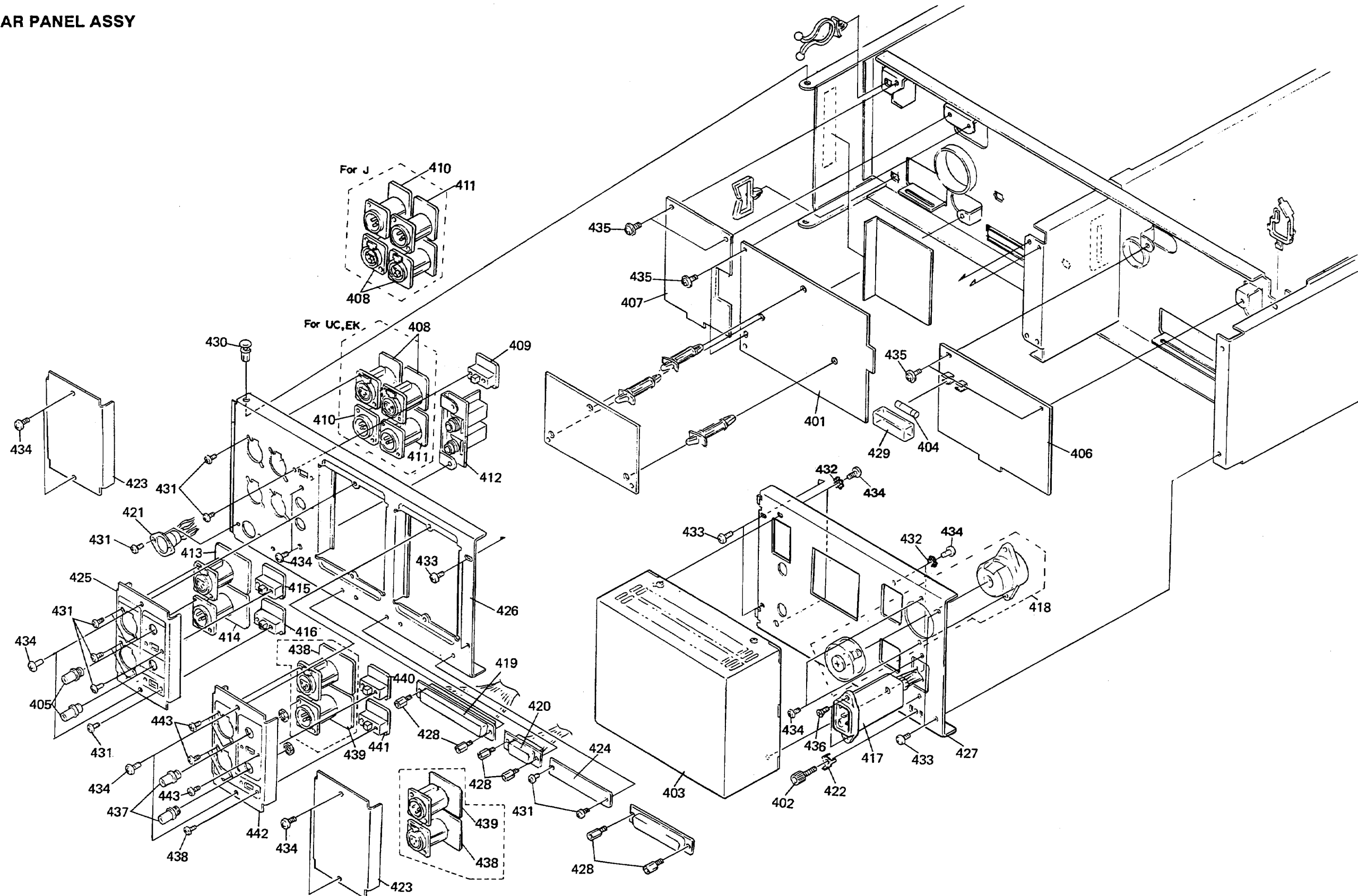
REAR PANEL ASSY

Index			
No.	Parts No.	SP	Description
401	A-7850-820-A	o	COMPLETE PCB, RM-77
402	X-2068-004-0	s	TERMINAL ASSY
403	1-413-612-11	s	SWITCHING REGULATOR
Δ 404	1-532-825-11	s	FUSE, GLASS TUBE (For J, UC)
	1-532-285-00	s	FUSE, TIME-LAG (For EK)
406	1-637-275-11	o	PC BOARD, AC-104
407	1-637-276-13	o	PC BOARD, CP-171
408	1-637-277-11	o	PC BOARD, CP-157A
409	1-637-279-11	o	PC BOARD, SW-426
410	1-637-280-11	o	PC BOARD, CP-172A
411	1-637-281-11	o	PC BOARD, CP-172B
412	1-637-282-12	o	PC BOARD, CP-158
Δ 417	1-946-795-13	s	HARNESS, SUB (AC IN)
Δ 418	1-946-796-11	s	HARNESS, SUB (VS)
419	1-946-959-11	o	HARNESS (RM)
420	1-946-960-11	o	HARNESS (9P)
421	1-946-961-12	o	HARNESS (FS)
422	2-068-008-00	s	WASHER
423	3-166-944-01	o	PLATE, BLIND
424	3-166-945-01	o	PLATE (25P), BLIND, D-SUB
426	3-166-954-02	o	PANEL, CONNECTOR
427	3-166-956-03	o	PANEL, REAR (For J, UC)
	3-166-956-12	o	PANEL, REAR (For EK)
428	3-673-910-00	o	SCREW, CONNECTOR
429	4-601-472-00	o	COVER, FUSE
430	4-818-403-00	s	RIVET, NYLON
431	7-621-775-10	s	SCREW +B 2.6x4
432	7-623-422-07	s	LW 3, TYPE B
433	7-682-546-09	s	SCREW +B 3x5
434	7-682-547-04	s	SCREW +B 3x6
435	7-682-903-11	s	SCREW +PWH 3x6
436	7-682-248-09	s	SCREW +K 3x8
[DABK-7030]			
437	1-561-781-11	s	CONNECTOR, BNC
438	1-637-295-11	o	PC BOARD, CP-159A
439	1-637-296-11	o	PC BOARD, CP-159B
440	1-637-297-11	o	PC BOARD, CP-152
441	1-637-298-11	o	PC BOARD, SW-455
442	3-166-878-01	o	PANEL, TC
443	7-621-775-10	s	SCREW +B 2.6x4
[DABK-7031]			
405	1-561-781-11	s	CONNECTOR, BNC (RECEPTACLE)
413	1-637-291-12	o	PC BOARD, CP-173A
414	1-637-292-12	o	PC BOARD, CP-173B
415	1-637-293-12	o	PC BOARD, SW-453
416	1-637-294-12	o	PC BOARD, SW-454
425	3-166-948-01	o	PANEL, DIO
431	7-621-775-10	s	SCREW +B 2.6x4

REAR PANEL ASSY

REAR PANEL ASSY

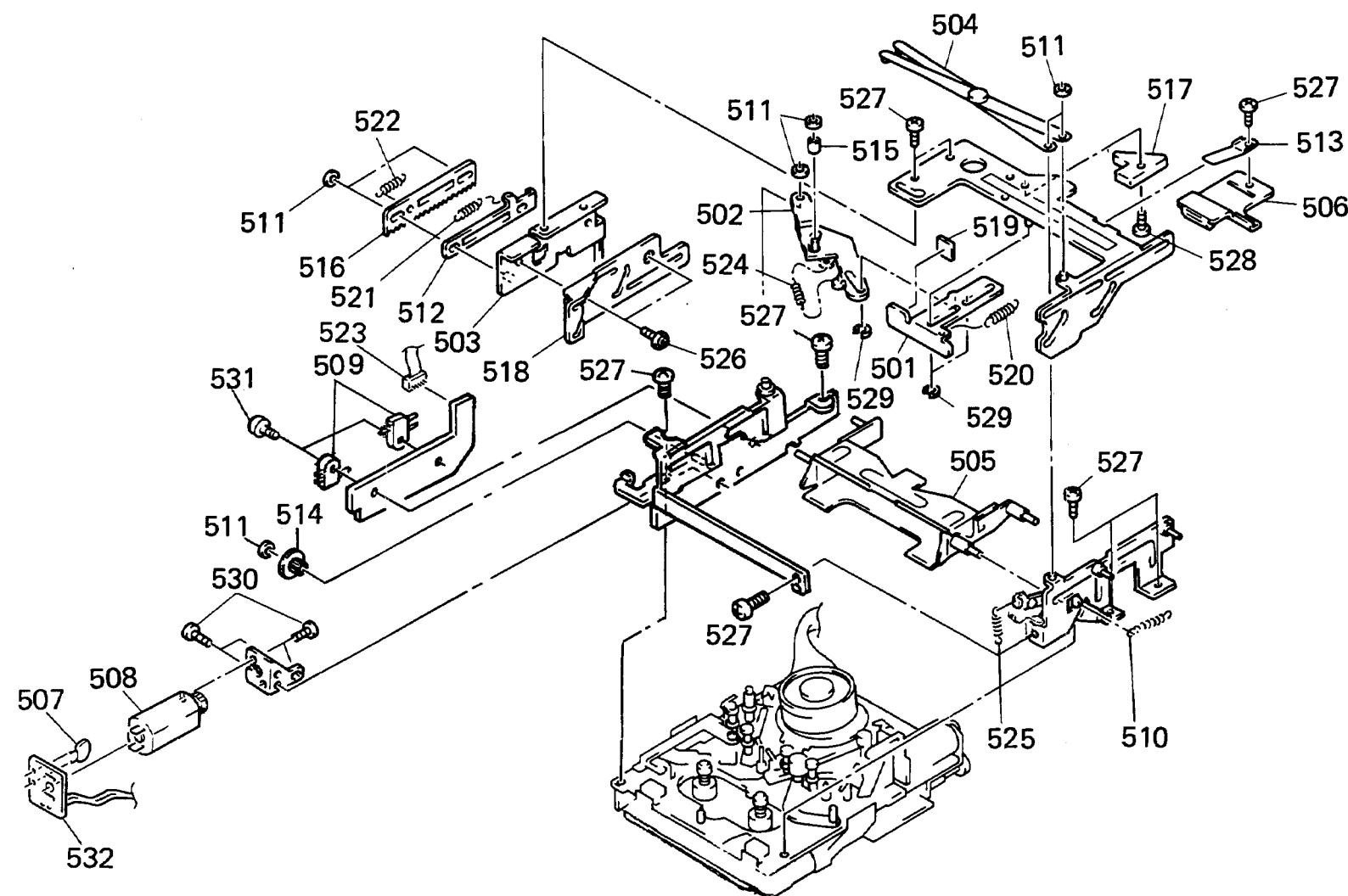
REAR PANEL ASSY



CASSETTE COMPARTMENT

CASSETTE COMPARTMENT

CASSETTE COMPARTMENT

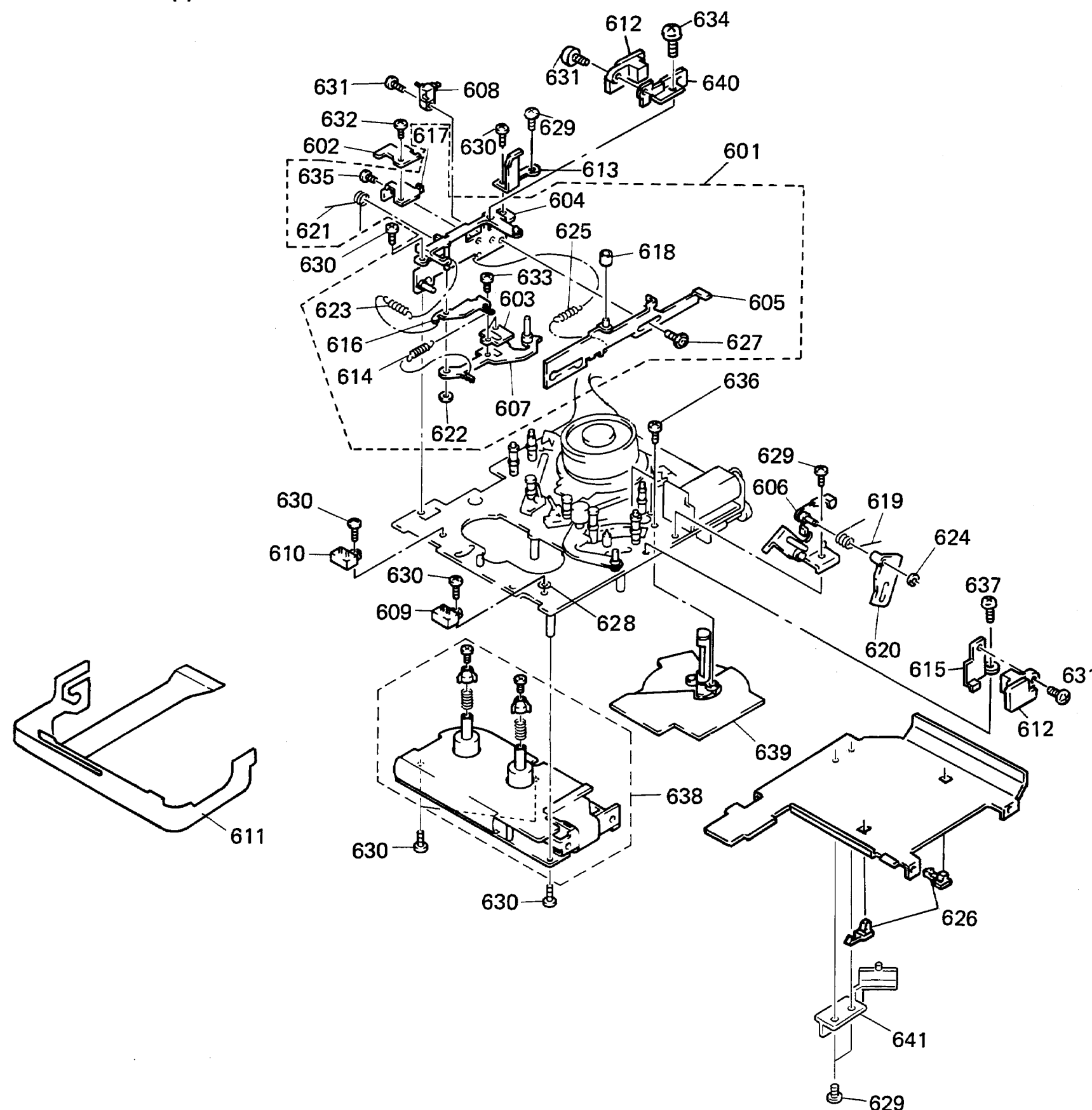


Index		
No.	Parts No.	SP Description
501	X-3346-903-1	o SLIDER (EJ) ASSY
502	X-3346-904-1	o LEVER (EJ) ASSY
503	X-3346-905-1	o BRACKET (RODER) ASSY
504	X-3346-906-1	o LEVER (X) ASSY
505	X-3346-913-1	o HOLDER ASSY, CASSETTE
506	X-3346-916-2	o LEVER (LOCK) ASSY
507	1-161-055-00	s CAP, CERAMIC 0.022 20% 25V
508	X-3165-836-1	s MOTOR ASSY
509	1-570-771-11	s SWITCH
510	3-305-523-00	s SPRING, TENSION
511	3-321-813-01	s WASHER, COTTER POLYETHYLENE
512	3-346-912-01	o LIMITER (RACK)
513	3-346-915-01	s SPRING (LOCK)
514	3-346-918-11	s WHEEL, WORM
515	3-346-936-01	s ROLLER
516	3-346-949-01	s RACK
517	3-346-950-01	o PLATE, CAM
518	3-346-955-01	s RODER (SUB)
519	3-346-962-01	o CUSHION (EJ)
520	3-346-963-01	s SPRING, TENSION
521	3-346-964-01	s SPRING, TENSION
522	3-346-965-01	s SPRING, TENSION
523	1-946-957-11	o HARNESS (CCP)
524	3-570-892-00	s SPRING, TENSION
525	4-877-850-00	s SPRING, TENSION
526	7-621-255-15	s SCREW +P 2x3
527	7-621-772-08	s SCREW +B 2x3
528	7-621-772-20	s SCREW +B 2x5
529	7-624-102-04	s STOP RING 1.5, TYPE-E
530	7-627-554-07	s SCREW, PRECISION +P 2x2.2
531	7-627-554-27	s SCREW, PRECISION +P 2x6
532	1-640-230-11	s PC BOARD, MTR

注 意: この頁の部品は、A-7806-080-Cの構成部品です。

NOTE: The parts on this page are component parts of A-7806-080-C.

MECHANISM DECK(1)



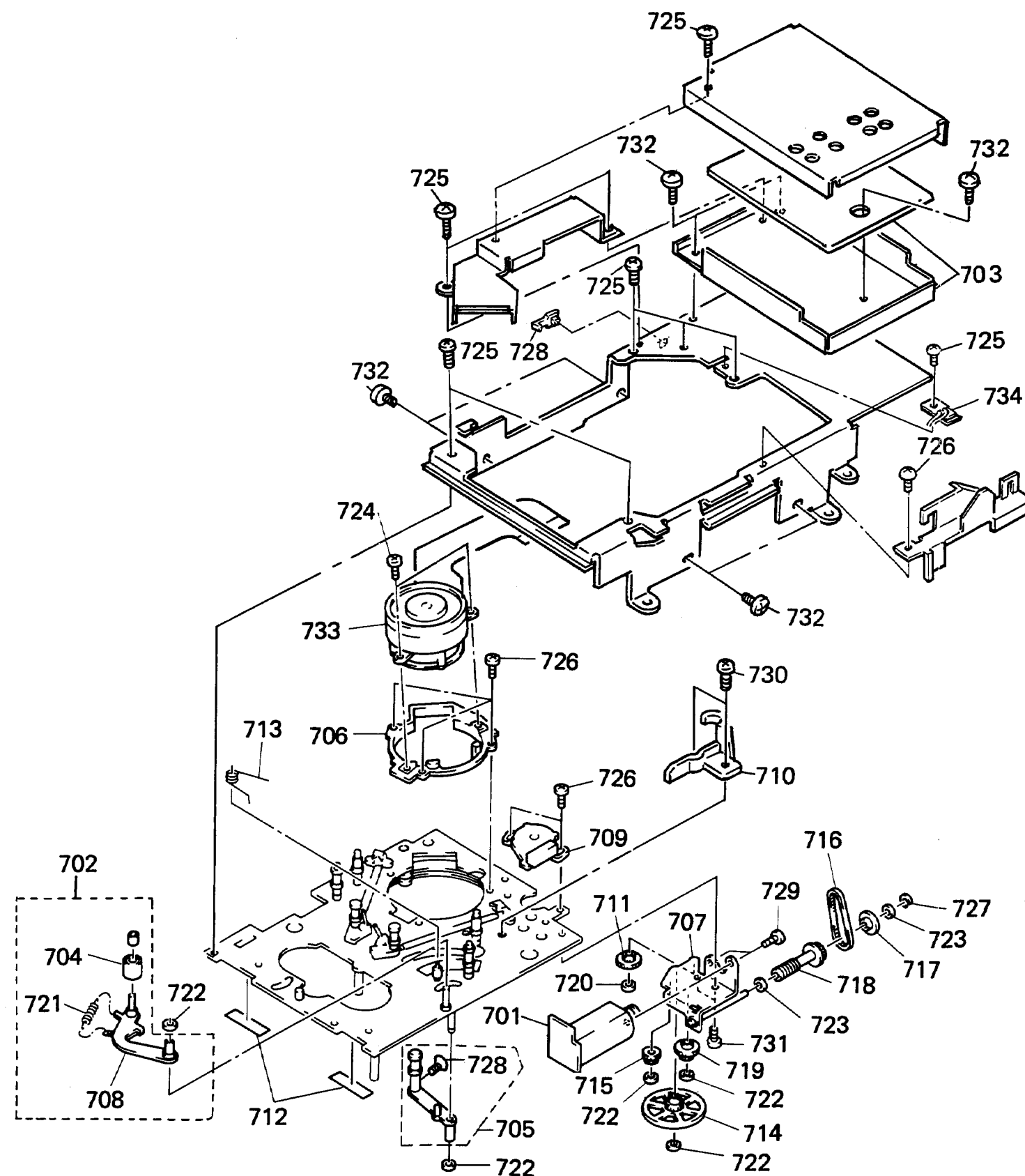
Index

No.	Parts No.	SP	Description
601	A-7810-486-A	s	TENSION REGULATOR ASSY
602	A-7850-780-A	o	MOUNTED PCB, TENSION REGULATOR
603	X-3337-611-1	s	HOLDER ASSY, MAGNET
604	X-3337-619-1	o	CHASSIS ASSY, TENSION REGULATOR
605	X-3337-627-1	s	SLIDER ASSY, MODE
606	X-3362-707-1	o	OPENER (R) ASSY, LID
607	X-3362-045-1	s	LEVER(TENSION REGULATOR) ASSY
608	1-570-771-11	s	SWITCH
609	1-570-883-11	s	SWITCH, PUSH (2 KEY)
610	1-570-883-21	s	SWITCH, PUSH (2 KEY)
611	1-637-288-11	s	PC BOARD, HN-151 FLEXIBLE
612	1-807-698-11	s	PHOTO SENSOR
613	3-167-379-01	o	OPENER(L), LID
614	3-307-377-00	s	SPRING, TENSION
615	3-337-610-01	o	BRACKET(RIGHT), E DETECTION
616	3-337-657-01	o	LEVER, LIMITER
617	3-337-662-01	o	BRACKET, HOLE ELEMENT
618	3-337-664-01	s	ROLLER
619	3-346-911-01	s	SPRING (LO)
620	3-346-954-01	s	LEVER (LO DRIVING)
621	3-352-502-01	s	SPRING
622	3-559-408-11	s	WASHER, POLYETHYLENE, DIA.1.2
623	3-561-626-00	s	SPRING, TENSION
624	3-570-615-00	s	POLY-WASHER
625	3-570-892-00	s	SPRING, TENSION
626	3-671-150-01	o	CLAMP
627	3-703-502-11	s	SCREW
628	4-918-886-01	s	WASHER, THRUST
629	7-621-772-08	s	SCREW +B 2x3
630	7-621-772-18	s	SCREW +B 2x4
631	7-621-772-20	s	SCREW +B 2x5
632	7-627-551-17	s	SCREW, PRECISION +P 1.4x2
633	7-627-551-87	s	SCREW, PRECISION +P 1.4x1.8
634	7-627-552-18	s	SCREW, PRECISION +B 1.7x1.6
635	7-627-552-27	s	SCREW, PRECISION +B 1.7x2
636	7-627-552-47	s	SCREW, PRECISION +P 1.7x4
637	7-627-854-07	s	SCREW, PRECISION +P 2x2.5
638	8-835-205-01	s	MOTOR, DC U-2A
639	8-835-206-01	s	MOTOR, DC BHF-2803A
640	3-166-932-01	o	BRACKET(L), E DETECTION
641	3-171-908-01	o	GUARD, FLEXIBLE

注 意: (606)、(619)、(620)、(624)を除くすべての部品は、
A-7806-080-Cの構成部品です。

NOTE: Except for (606), (619), (620) and (624) all the parts
are component parts of A-7806-080-C.

MECHANISM DECK(2)



E-21

Index

No.	Parts No.	SP	Description
701	X-3337-648-1	s	MOTOR ASSY, CONTROL
702	A-7810-488-A	s	PINCH ROLLER BLOCK ASSY
703	A-7810-495-A	o	RF-31 ASSY
704	X-3337-610-1	s	PINCH ROLLER ASSY
705	A-7810-553-B	s	ARM ASSY, F
706	X-3337-614-1	o	SLANT ASSY
707	X-3337-617-1	o	BRACKET ASSY, CONTROL MOTOR
708	X-3337-660-1	s	ARM (PINCH ROLLER) ASSY
709	1-464-724-11	s	ENCODER, ROTARY
710	3-168-976-01	s	GUARD, TAPE
711	3-337-669-01	s	GEAR, MIDWAY
712	3-337-696-01	o	SHEET, INSULATING
713	3-345-046-01	o	SPRING
714	3-345-181-01	s	GEAR (LOADING A)
715	3-345-182-01	s	GEAR (LOADING B)
716	3-346-908-01	s	BELT
717	3-346-909-01	s	COLLAR (WORM)
718	3-346-910-01	s	PULLEY (WORM)
719	3-352-501-01	s	WHEEL, WORM
720	3-559-408-11	s	WASHER, POLYETHYLENE, DIA.1.2
721	3-547-659-00	s	SPRING, TENSION
722	3-701-436-11	s	WASHER, 1.6 POLYETHYLENE
723	3-701-437-21	s	WASHER
724	7-621-255-25	s	SCREW +P 2x4
725	7-621-772-08	s	SCREW +B 2x3
726	7-621-772-18	s	SCREW +B 2x4
727	7-624-102-04	s	STOP RING 1.5, TYPE -E
728	3-671-150-11	o	CLAMP
729	7-627-553-17	s	SCREW, PRECISION +P 2x2
730	7-627-852-18	s	SCREW, PRECISION +P 1.7x4
731	7-628-253-00	s	SCREW +PS 2x4
732	7-682-547-04	s	SCREW +B 3x6
733	8-848-548-11	s	DRUM ASSY DOH-14A-R
734	1-808-281-52	s	SENSOR

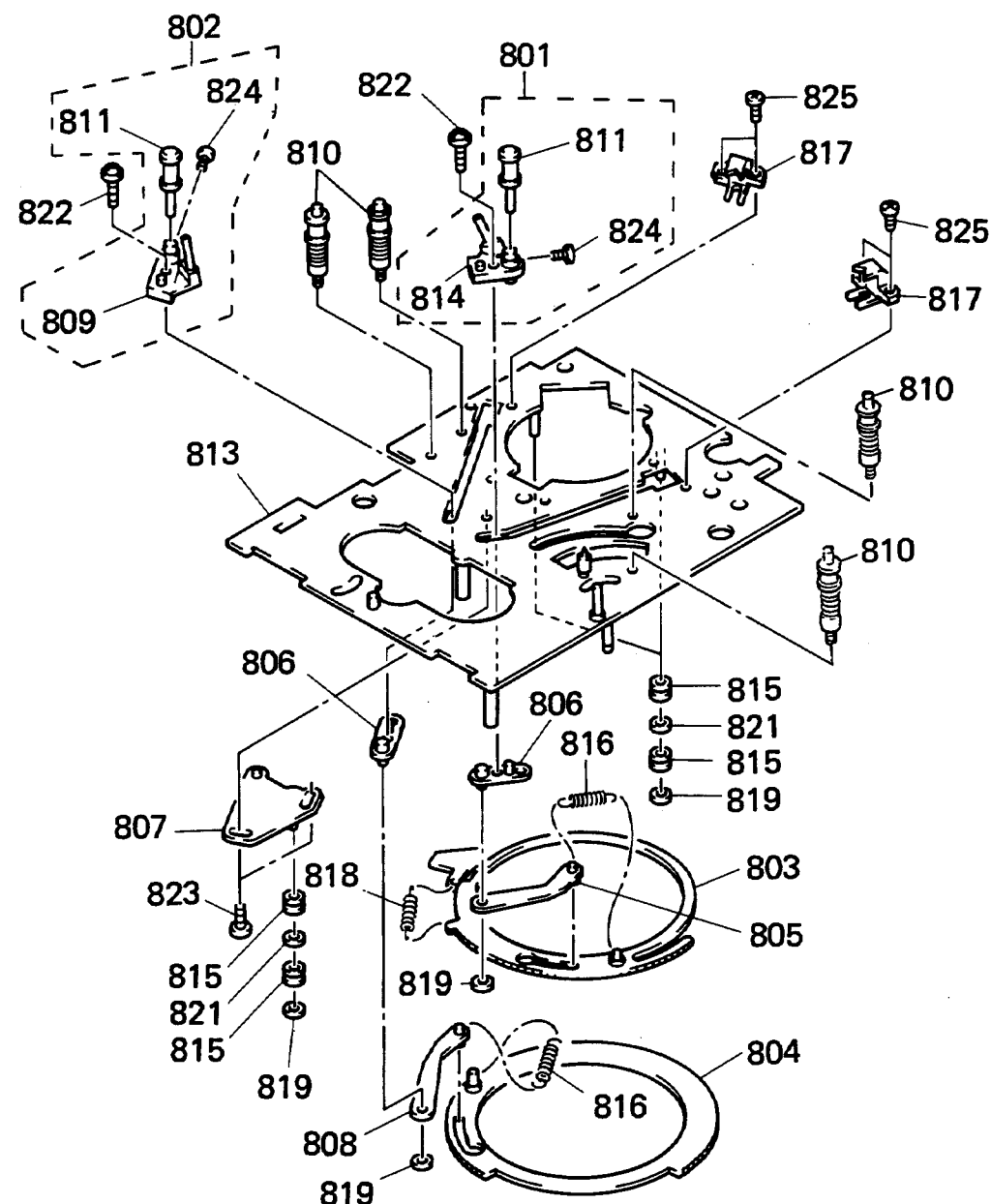
注 意: この頁の部品は、A-7806-080-Cの構成部品です。

NOTE: The parts on this page are component parts of A-7806-080-C.

E-22

PCM-7030 (J,UC,EK)

MECHANISM DECK(3)



Index			
No.	Parts No.	SP	Description
801	A-7810-492-C	s	GUIDE (R) ASSY
802	A-7810-493-C	s	GUIDE (L) ASSY
803	X-3337-601-1	s	RING (RIGHT) ASSY, LOADING
804	X-3337-602-1	s	RING (LEFT) ASSY, LOADING
805	X-3337-603-1	s	ARM (RIGHT) ASSY, LOADING
806	X-3337-604-1	s	PLATE ASSY, LOADING
807	X-3337-605-1	o	ARM ASSY, RING ROLLER
808	X-3337-607-1	o	ARM (LEFT) ASSY, LOADING
809	X-3337-615-1	s	SLANT BLOCK (LEFT) ASSY
810	A-7810-552-B	s	AP R.G ASSY
811	X-3362-671-1	s	GUIDE ASSY, ROLLER
813	X-3337-625-1	o	CHASSIS ASSY, MECHANICAL
814	X-3337-647-1	s	SLANT BLOCK (RIGHT) ASSY
815	3-337-622-01	s	ROLLER, RING
816	3-337-653-01	s	SPRING, TENSION
817	3-337-685-01	o	CATCHER
818	3-547-659-00	s	SPRING, TENSION
819	3-559-408-11	s	WASHER, POLYETHYLENE, DIA.1.2
821	3-701-436-11	s	WASHER, 1.6 POLYETHYLENE
822	3-703-502-81	s	SCREW
823	7-621-772-08	s	SCREW +B 2x3
824	7-627-551-17	s	SCREW, PRECISION +P 1.4x2
825	7-627-552-47	s	SCREW, PRECISION +P 1.7x4

注 意; この頁の部品は、A-7806-080-Cの構成部品です。

NOTE: The parts on this page are component parts of A-7806-080-C.

E-3. ELECTRICAL PARTS LIST

STANDARDIZED PARTS LIST

Replacements for capacitors and resistors not given in each board parts lists are shown below.
If a capacitor with the desired working voltage is not found, choose one of higher working voltage.

CAPACITOR, CHIP CERAMIC

Part No. SP Description

1-163-093-00	s CAP, CHIP CERAMIC	10pF	5%	50V
1-163-101-00	s CAP, CHIP CERAMIC	22pF	5%	50V
1-163-105-00	s CAP, CHIP CERAMIC	33pF	5%	50V
1-163-109-00	s CAP, CHIP CERAMIC	47pF	5%	50V
1-163-117-00	s CAP, CHIP CERAMIC	100pF	5%	50V
1-163-133-00	s CAP, CHIP CERAMIC	470pF	5%	50V
1-163-141-00	s CAP, CHIP CERAMIC	1000pF	5%	50V
1-163-019-00	s CAP, CHIP CERAMIC	6800pF	10%	50V
1-162-970-11	s CAP, CHIP CERAMIC	0.01	10%	20V
1-163-038-00	s CAP, CHIP CERAMIC	0.1		50V

CAPACITOR, ELECTROLYTIC

Part No. SP Description

1-123-382-00	s CAP, ELECT	3.3	20%	100V
1-126-059-11	s CAP, ELECT	10	20%	63V
1-124-229-00	s CAP, ELECT	33	20%	10V
1-124-910-11	s CAP, ELECT	47	20%	50V
1-124-584-00	s CAP, ELECT	100	20%	10V
1-126-101-11	s CAP, ELECT	100	20%	16V
1-124-122-11	s CAP, ELECT	100	20%	50V
1-126-335-11	s CAP, ELECT	220	20%	10V
1-124-120-11	s CAP, ELECT	220	20%	25V

RESISTOR, CHIP

Part No. SP Description

1-216-295-00	s RES, CHIP	0	5%	1/10W
1-216-001-00	s RES, CHIP	10	5%	1/10W
1-216-009-00	s RES, CHIP	22	5%	1/10W
1-216-017-00	s RES, CHIP	47	5%	1/10W
1-216-021-00	s RES, CHIP	68	5%	1/10W
1-216-025-00	s RES, CHIP	100	5%	1/10W
1-216-029-00	s RES, CHIP	150	5%	1/10W
1-216-031-00	s RES, CHIP	180	5%	1/10W
1-216-033-00	s RES, CHIP	220	5%	1/10W
1-216-037-00	s RES, CHIP	330	5%	1/10W
1-216-041-00	s RES, CHIP	470	5%	1/10W
1-216-045-00	s RES, CHIP	680	5%	1/10W
1-216-049-00	s RES, CHIP	1k	5%	1/10W
1-216-051-00	s RES, CHIP	1.2k	5%	1/10W
1-216-055-00	s RES, CHIP	1.8k	5%	1/10W
1-216-057-00	s RES, CHIP	2.2k	5%	1/10W
1-216-059-00	s RES, CHIP	2.7k	5%	1/10W
1-216-061-00	s RES, CHIP	3.3k	5%	1/10W
1-216-063-00	s RES, CHIP	3.9k	5%	1/10W
1-216-065-00	s RES, CHIP	4.7k	5%	1/10W
1-216-069-00	s RES, CHIP	6.8k	5%	1/10W
1-216-073-00	s RES, CHIP	10k	5%	1/10W
1-216-077-00	s RES, CHIP	15k	5%	1/10W
1-216-081-00	s RES, CHIP	22k	5%	1/10W
1-216-083-00	s RES, CHIP	27k	5%	1/10W
1-216-085-00	s RES, CHIP	33k	5%	1/10W
1-216-089-00	s RES, CHIP	47k	5%	1/10W
1-216-097-00	s RES, CHIP	100k	5%	1/10W
1-216-099-00	s RES, CHIP	120k	5%	1/10W
1-216-101-00	s RES, CHIP	150k	5%	1/10W
1-216-109-00	s RES, CHIP	330k	5%	1/10W
1-216-121-00	s RES, CHIP	1.0M	5%	1/10W
1-216-133-00	s RES, CHIP	3.3M	5%	1/10W

AC-104 BOARD

Ref. No. or Q'ty	Part No.	SP Description
2pcs	1-533-189-11	o HOLDER, FUSE
1pc	1-637-275-11	o PC BOARD, AC-104
CN1	△1-564-104-11	o PIN, CONNECTOR 3P
CN2	△1-564-241-00	o CONNECTOR, 4P, MALE
CN3	△1-564-242-00	o PIN, CONNECTOR 5P
CN4	△1-564-915-11	o PIN, CONNECTOR 7P
CN5	△1-564-905-11	o PIN, CONNECTOR 9P
CN6	△1-564-243-00	o PIN, CONNECTOR 6P

ADA-18 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7850-803-B	o COMPLETE PCB, ADA-18 (This assembly includes the following parts.)
C1	1-164-096-11	s CERAMIC 0.01uF 50V
C2	1-164-096-11	s CERAMIC 0.01uF 50V
C3	1-164-096-11	s CERAMIC 0.01uF 50V
C4	1-164-096-11	s CERAMIC 0.01uF 50V
C9	1-123-345-00	s ELECT 100uF 20% 35VW
C12	1-164-096-11	s CERAMIC 0.01uF 50V
C13	1-164-096-11	s CERAMIC 0.01uF 50V
C14	1-164-096-11	s CERAMIC 0.01uF 50V
C15	1-164-096-11	s CERAMIC 0.01uF 50V
C16	1-164-096-11	s CERAMIC 0.01uF 50V
C17	1-164-096-11	s CERAMIC 0.01uF 50V
C18	1-164-096-11	s CERAMIC 0.01uF 50V
C19	1-126-335-11	s ELECT 220uF 20% 10VW
C20	1-126-335-11	s ELECT 220uF 20% 10VW
C21	1-164-096-11	s CERAMIC 0.01uF 50V
C22	1-164-096-11	s CERAMIC 0.01uF 50V
C23	1-126-096-11	s ELECT 10uF 20% 35V
C24	1-126-059-11	s ELECT 10uF 20% 50VW
C25	1-162-896-11	s CERAMIC 0.01uF 10% 50V
C26	1-126-059-11	s ELECT 10uF 20% 50VW
C27	1-162-896-11	s CERAMIC 0.01uF 10% 50V
C28	1-124-261-00	s ELECT 10uF 20% 50V
C29	1-164-096-11	s CERAMIC 0.01uF 50V
C30	1-164-096-11	s CERAMIC 0.01uF 50V
C31	1-126-059-11	s ELECT 10uF 20% 50VW
C32	1-162-896-11	s CERAMIC 0.01uF 10% 50V
C33	1-164-096-11	s CERAMIC 0.01uF 50V
C35	1-164-096-11	s CERAMIC 0.01uF 50V
C37	1-164-096-11	s CERAMIC 0.01uF 50V
C38	1-164-096-11	s CERAMIC 0.01uF 50V
C39	1-164-096-11	s CERAMIC 0.01uF 50V
C40	1-164-096-11	s CERAMIC 0.01uF 50V
C41	1-164-096-11	s CERAMIC 0.01uF 50V
C101	1-124-657-00	s ELECT, NONPOLAR 10uF 20% 50V
C102	1-124-657-00	s ELECT, NONPOLAR 10uF 20% 50V
C103	1-124-657-00	s ELECT, NONPOLAR 10uF 20% 50V
C105	1-164-096-11	s CERAMIC 0.01uF 50V
C107	1-164-096-11	s CERAMIC 0.01uF 50V
C108	1-130-856-00	s FILM 0.0068uF 3% 100W
C109	1-162-716-11	s CERAMIC 180PF 1% 50V
C110	1-126-529-11	s ELECT 0.47uF 20% 50VW
C111	1-164-127-11	s CERAMIC 510PF 5% 50V
C112	1-164-077-11	s CERAMIC 220PF 10% 50V
C113	1-164-096-11	s CERAMIC 0.01uF 50V
C114	1-164-096-11	s CERAMIC 0.01uF 50V
C115	1-124-499-11	s ELECT, NONPOLAR 1uF 20% 50V
C116	1-124-499-11	s ELECT, NONPOLAR 1uF 20% 50V
C117	1-164-073-11	s CERAMIC 100PF 10% 50V
C118	1-124-282-00	s ELECT, NONPOLAR 22uF 20% 25V
C120	1-164-096-11	s CERAMIC 0.01uF 50V
C121	1-164-096-11	s CERAMIC 0.01uF 50V
50V		
C202	1-124-657-00	s ELECT, NONPOLAR 10uF 20% 50V
C203	1-124-657-00	s ELECT, NONPOLAR 10uF 20% 50V

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

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Ref. No. or Q'ty	Part No.	SP Description
C205	1-164-096-11	s CERAMIC 0.01uF 50V
C207	1-164-096-11	s CERAMIC 0.01uF 50V
C208	1-130-856-00	s FILM 0.0068uF 3% 100W
C209	1-162-716-11	s CERAMIC 180PF 1% 50V
C210	1-126-529-11	s ELECT 0.47uF 20% 50VW
C211	1-164-127-11	s CERAMIC 510PF 5% 50V
C212	1-164-077-11	s CERAMIC 220PF 10% 50V
C213	1-164-096-11	s CERAMIC 0.01uF 50V
C214	1-164-096-11	s CERAMIC 0.01uF 50V
C215	1-124-499-11	s ELECT, NONPOLAR 1uF 20% 50V
C216	1-124-499-11	s ELECT, NONPOLAR 1uF 2
C217	1-164-073-11	s CERAMIC 100PF 10% 50V
C218	1-124-282-00	s ELECT, NONPOLAR 22uF 20% 25V
C220	1-164-096-11	s CERAMIC 0.01uF 50V
C221	1-164-096-11	s CERAMIC 0.01uF 50V
C301	1-164-081-11	s CERAMIC 470PF 10% 50VW
C302	1-126-162-11	s ELECT 3.3uF 20% 50V
C303	1-126-162-11	s ELECT 3.3uF 20% 50V
C306	1-136-230-00	s FILM 0.0022uF 5% 100W
C307	1-136-230-00	s FILM 0.0022uF 5% 100W
C308	1-106-351-00	s MYLAR 0.0022 5% 200V
C309	1-164-096-11	s CERAMIC 0.01uF 50V
C310	1-164-096-11	s CERAMIC 0.01uF 50V
C311	1-164-073-11	s CERAMIC 100PF 10% 50V
C312	1-124-657-00	s ELECT, NONPOLAR 10uF 20% 50V
C313	1-130-856-00	s MYLAR 0.0068uF 3% 100V
C314	1-162-716-11	s CERAMIC 180PF 1% 50V
C315	1-126-529-11	s ELECT 0.47uF 20% 50VW
C316	1-164-073-11	s CERAMIC 100PF 10% 50V
C317	1-124-657-00	s ELECT, NONPOLAR 10uF 20% 50V
C318	1-164-096-11	s CERAMIC 0.01uF 50V
C319	1-164-096-11	s CERAMIC 0.01uF 50V
C320	1-164-096-11	s CERAMIC 0.01uF 50V
C321	1-164-096-11	s CERAMIC 0.01uF 50V
C323	1-164-066-11	s CERAMIC 68PF 5% 50VW
C324	1-164-066-11	s CERAMIC 68PF 5% 50VW
C327	1-130-471-00	s MYLAR 0.001uF 5% 50V
C328	1-123-335-00	s ELECT 330uF 20% 25VW
C329	1-123-335-00	s ELECT 330uF 20% 25VW
C330	1-164-096-11	s CERAMIC 0.01uF 50V
C331	1-164-096-11	s CERAMIC 0.01uF 50V
C334	1-164-096-11	s CERAMIC 0.01uF 50V
C335	1-124-657-00	s ELECT 10uF 20% 50V
C336	1-164-075-11	s CERAMIC 150PF 10% 50VW
C337	1-124-657-00	s ELECT, NONPOLAR 10uF 20% 50V
C338	1-164-096-11	s CERAMIC 0.01uF 50V
C340	1-164-096-11	s CERAMIC 0.01uF 50V
C401	1-164-081-11	s CERAMIC 470PF 10% 50VW
C402	1-126-162-11	s ELECT 3.3uF 20% 50V
C403	1-126-162-11	s ELECT 3.3uF 20% 50V
C406	1-136-230-00	s FILM 0.0022uF 5% 100W
C407	1-136-230-00	s FILM 0.0022uF 5% 100W
C408	1-106-351-00	s MYLAR 0.0022 5% 200V
C409	1-164-096-11	s CERAMIC 0.01uF 50V
C410	1-164-096-11	s CERAMIC 0.01uF 50V
C411	1-164-073-11	s CERAMIC 100PF 10% 50V
C412	1-124-657-00	s ELECT, NONPOLAR 10uF 20% 50V
C413	1-130-856-00	s FILM 0.0068uF 3% 100W
C414	1-162-716-11	s CERAMIC 180PF 1% 50V

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Ref. No. or Q'ty	Part No.	SP Description
C415	1-126-529-11	s ELECT 0.47uF 20% 50VW
C416	1-164-073-11	s CERAMIC 100PF 10% 50V
C417	1-124-657-00	s ELECT, NONPOLAR 10uF 20% 50V
C418	1-164-096-11	s CERAMIC 0.01uF 50V
C419	1-164-096-11	s CERAMIC 0.01uF 50V
C420	1-164-096-11	s CERAMIC 0.01uF 50V
C421	1-164-096-11	s CERAMIC 0.01uF 50V
C423	1-164-066-11	s CERAMIC 68PF 5% 50VW
C424	1-164-066-11	s CERAMIC 68PF 5% 50VW
C427	1-130-471-00	s MYLAR 0.001uF 5% 50V
C428	1-123-335-00	s ELECT 330uF 20% 25VW
C429	1-123-335-00	s ELECT 330uF 20% 25VW
C430	1-164-096-11	s CERAMIC 0.01uF 50V
C431	1-164-096-11	s CERAMIC 0.01uF 50V
C434	1-164-096-11	s CERAMIC 0.01uF 50V
C435	1-124-657-00	s ELECT 10uF 20% 50V
C436	1-164-075-11	s CERAMIC 150PF 10% 50VW
C437	1-124-657-00	s ELECT, NONPOLAR 10uF 20% 50V
C438	1-164-096-11	s CERAMIC 0.01uF 50V
C440	1-164-096-11	s CERAMIC 0.01uF 50V
C501	1-164-073-11	s CERAMIC 100PF 5% 50V
C502	1-164-076-11	s CERAMIC 180PF 10% 50V
C503	1-164-073-11	s CERAMIC 100PF 10% 50V
C504	1-162-901-11	s CERAMIC 0.1 10% 50V
CN1	1-506-468-11	s CONNECTOR, 3P, MALE
CN2	1-506-470-11	s CONNECTOR, 5P, MALE
CN3	1-506-468-11	s CONNECTOR, 3P, MALE
CN4	1-506-470-11	s CONNECTOR, 5P, MALE
CN5	1-506-468-11	s CONNECTOR, 3P, MALE
CN6	1-564-705-11	o PIN HEADER, STRAIGHT 3P
CN7	1-506-468-11	s CONNECTOR, 3P, MALE
CN8	1-564-705-11	o PIN HEADER, STRAIGHT 3P
CN9	1-506-469-11	s CONNECTOR, 4P, MALE
CN10	1-506-475-11	s CONNECTOR, 10P, MALE
CN11	1-564-705-11	o PIN HEADER, STRAIGHT 3P
CN12	1-564-708-11	o PIN HEADER, STRAIGHT 6P
CN13	1-506-478-11	s CONNECTOR, 13P, MALE
D1	8-719-911-19	s DIODE 1SS119
D2	8-719-911-19	s DIODE 1SS119
D3	8-719-200-02	s DIODE 10E2
D4	8-719-911-19	s DIODE 1SS119
D5	8-719-911-19	s DIODE 1SS119
D8	8-719-911-19	s DIODE 1SS119
D9	8-719-911-19	s DIODE 1SS119
D10	8-719-911-19	s DIODE 1SS119
D11	8-719-200-02	s DIODE 10E2
D12	8-719-200-02	s DIODE 10E2
D13	8-719-200-02	s DIODE 10E2
D14	8-719-200-02	s DIODE 10E2
D101	8-719-911-19	s DIODE 1SS119
D102	8-719-911-19	s DIODE 1SS119
D103	8-719-911-19	s DIODE 1SS119
D104	8-719-911-19	s DIODE 1SS119
D105	8-719-911-19	s DIODE 1SS119
D106	8-719-911-19	s DIODE 1SS119
D107	8-719-911-19	s DIODE 1SS119
D108	8-719-911-19	s DIODE 1SS119
D109	8-719-911-19	s DIODE 1SS119

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

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Ref. No. or Q'ty	Part No.	SP Description
D201	8-719-911-19	s DIODE 1SS119
D202	8-719-911-19	s DIODE 1SS119
D203	8-719-911-19	s DIODE 1SS119
D204	8-719-911-19	s DIODE 1SS119
D205	8-719-911-19	s DIODE 1SS119
D206	8-719-911-19	s DIODE 1SS119
D207	8-719-911-19	s DIODE 1SS119
D208	8-719-911-19	s DIODE 1SS119
D209	8-719-911-19	s DIODE 1SS119
D301	8-719-911-19	s DIODE 1SS119
D401	8-719-911-19	s DIODE 1SS119
FB1	1-412-694-11	s INDUCTOR, BEED
FB2	1-412-694-11	s INDUCTOR, BEED
FB3	1-412-694-11	s INDUCTOR, BEED
FB4	1-412-694-11	s INDUCTOR, BEED
FB5	1-412-694-11	s INDUCTOR, BEED
FB6	1-412-694-11	s INDUCTOR, BEED
IC1	8-759-999-09	s IC CS5326-KP
IC2	8-759-996-75	s IC SM5813APS
IC3	8-759-982-05	s IC RC7805FA
IC4	8-759-982-38	s IC RC7905FA
IC5	8-759-916-14	s IC SN74HC04AN
IC6	8-759-916-14	s IC SN74HC04AN
IC7	8-759-921-19	s IC SN74HC161AN
IC8	8-759-916-29	s IC SN74HC74AN
IC9	8-759-981-89	s IC RC4556S
IC10	8-759-981-89	s IC RC4556S
IC11	8-759-916-12	s IC SN74HC00AN
IC12	8-759-916-29	s IC SN74HC74AN
IC13	8-759-916-29	s IC SN74HC74AN
IC101	8-759-900-72	s IC NE5532P
IC102	8-759-900-72	s IC NE5532P
IC103	8-759-900-72	s IC NE5532P
IC201	8-759-900-72	s IC NE5532P
IC202	8-759-900-72	s IC NE5532P
IC203	8-759-900-72	s IC NE5532P
IC301	8-759-998-66	s IC PCM61P-S
IC302	8-759-900-72	s IC NE5532P
IC303	8-759-900-72	s IC NE5532P
IC304	8-759-602-18	s IC M5219L
IC305	8-759-602-18	s IC M5219L
IC401	8-759-998-66	s IC PCM61P-S
IC402	8-759-900-72	s IC NE5532P
IC403	8-759-900-72	s IC NE5532P
IC404	8-759-602-18	s IC M5219L
IC405	8-759-602-18	s IC M5219L
L1	1-412-533-11	s COIL 47uH
L2	1-412-533-11	s COIL 47uH
L3	1-412-533-11	s COIL 47uH
L4	1-412-533-11	s COIL 47uH
L5	1-412-533-11	s COIL 47uH
L6	1-412-533-11	s COIL 47uH
Q1	8-729-900-36	s TRANSISTOR DTC124ES
Q2	8-729-900-63	s TRANSISTOR DTA124ES
Q3	8-729-900-63	s TRANSISTOR DTA124ES
Q4	8-729-900-36	s TRANSISTOR DTC124ES
Q5	8-729-900-63	s TRANSISTOR DTA124ES

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Ref. No. or Q'ty	Part No.	SP Description
Q6	8-729-900-36	s TRANSISTOR DTC124ES
Q7	8-729-900-36	s TRANSISTOR DTC124ES
Q8	8-729-900-63	s TRANSISTOR DTA124ES
Q9	8-729-900-63	s TRANSISTOR DTA124ES
Q10	8-729-140-98	s TRANSISTOR 2SD773-34
Q11	8-729-140-98	s TRANSISTOR 2SD773-34
Q101	8-729-230-86	s TRANSISTOR 2SK170-GRBLV
Q102	8-729-230-86	s TRANSISTOR 2SK170-GRBLV
Q103	8-729-230-86	s TRANSISTOR 2SK170-GRBLV
Q201	8-729-230-86	s TRANSISTOR 2SK170-GRBLV
Q202	8-729-230-86	s TRANSISTOR 2SK170-GRBLV
Q203	8-729-230-86	s TRANSISTOR 2SK170-GRBLV
Q301	8-729-230-86	s TRANSISTOR 2SK170-GRBLV
Q302	8-729-141-58	s TRANSISTOR 2SC2275A-QP
Q303	8-729-230-45	s TRANSISTOR 2SC2458-YGR
Q304	8-729-141-10	s TRANSISTOR 2SA985A-QP
Q305	8-729-141-58	s TRANSISTOR 2SC2275A-QP
Q306	8-729-230-45	s TRANSISTOR 2SC2458-YGR
Q307	8-729-141-10	s TRANSISTOR 2SA985A-QP
Q401	8-729-230-86	s TRANSISTOR 2SK170-GRBLV
Q402	8-729-141-58	s TRANSISTOR 2SC2275A-QP
Q403	8-729-230-45	s TRANSISTOR 2SC2458-YGR
Q404	8-729-141-10	s TRANSISTOR 2SA985A-QP
Q405	8-729-141-58	s TRANSISTOR 2SC2275A-QP
Q406	8-729-230-45	s TRANSISTOR 2SC2458-YGR
Q407	8-729-141-10	s TRANSISTOR 2SA985A-QP
R1	A1-212-849-00	s FUSIBLE 4.7 5% 1/4W
R2	A1-212-849-00	s FUSIBLE 4.7 5% 1/4W
R3	1-249-437-11	s CARBON 47K 5% 1/4W
R4	1-249-429-11	s CARBON 10K 5% 1/4W
R5	1-249-437-11	s CARBON 47K 5% 1/4W
R6	1-249-437-11	s CARBON 47K 5% 1/4W
R7	1-249-437-11	s CARBON 47K 5% 1/4W
R8	1-249-429-11	s CARBON 10K 5% 1/4W
R9	1-249-405-11	s CARBON 100 5% 1/4W
R10	1-215-449-00	s METAL 15K 1% 1/4W
R11	1-249-393-11	s CARBON 10 5% 1/4W
R12	1-249-397-11	s CARBON 22 5% 1/4W
R13	1-249-437-11	s CARBON 47K 5% 1/4W
R14	1-249-397-11	s CARBON 22 5% 1/4W
R18	1-249-421-11	s CARBON 2.2K 5% 1/4W
R20	1-249-437-11	s CARBON 47K 5% 1/4W
R21	1-249-429-11	s CARBON 10K 5% 1/4W
R22	1-249-429-11	s CARBON 10K 5% 1/4W
R23	1-249-421-11	s CARBON 2.2K 5% 1/4W
R24	1-249-429-11	s CARBON 10K 5% 1/4W
R25	1-249-421-11	s CARBON 2.2K 5% 1/4W
R26	1-249-429-11	s CARBON 10K 5% 1/4W
R101	1-215-471-00	s METAL 120K 1% 1/4W
R102	1-215-471-00	s METAL 120K 1% 1/4W
R103	1-215-437-00	s METAL 4.7K 1% 1/4W
R104	1-215-425-00	s METAL 1.5K 1% 1/4W
R105	1-215-437-00	s METAL 4.7K 1% 1/4W
R106	1-215-485-00	s METAL 470K 1% 1/4W
R107	1-215-485-00	s METAL 470K 1% 1/4W
R108	1-215-449-00	s METAL 15K 1% 1/4W
R109	1-215-453-00	s METAL 22K 1% 1/4W
R110	1-215-405-00	s METAL 220 1% 1/4W

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

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Ref. No. or Q'ty	Part No.	SP Description
R111	1-215-429-00	s METAL 2.2K 1% 1/4W
R112	1-215-405-00	s METAL 220 1% 1/4W
R113	1-215-429-00	s METAL 2.2K 1% 1/4W
R114	1-215-449-00	s METAL 15K 1% 1/4W
R115	1-215-453-00	s METAL 22K 1% 1/4W
R116	1-215-469-00	s METAL 100K 1% 1/4W
R117	1-215-421-00	s METAL 1K 1% 1/4W
R118	1-215-477-00	s METAL 220K 1% 1/4W
R119	1-215-421-00	s METAL 1K 1% 1/4W
R120	1-215-428-00	s METAL 2K 1% 1/4W
R121	1-215-445-00	s METAL 10K 1% 1/4W
R122	1-215-475-00	s METAL 180K 1% 1/4W
R123	1-215-445-00	s METAL 10K 1% 1/4W
R124	1-215-429-00	s METAL 2.2K 1% 1/4W
R125	1-215-467-00	s METAL 82K 1% 1/4W
R126	1-215-485-00	s METAL 470K 1% 1/4W
R127	1-249-417-11	s CARBON 1K 5% 1/4W
R128	1-249-441-11	s CARBON 100K 5% 1/4W
R129	1-215-469-00	s METAL 100K 1% 1/4W
R130	1-215-445-00	s METAL 10K 1% 1/4W
R131	1-215-445-00	s METAL 10K 1% 1/4W
R132	1-215-469-00	s METAL 100K 1% 1/4W
R133	1-249-435-11	s CARBON 33K 5% 1/4W
R134	1-249-417-11	s CARBON 1K 5% 1/4W
R135	1-249-441-11	s CARBON 100K 5% 1/4W
R136	1-249-441-11	s CARBON 100K 5% 1/4W
R137	1-215-421-00	s METAL 1K 1% 1/4W
R138	1-215-421-00	s METAL 1K 1% 1/4W
R139	1-215-469-00	s METAL 100K 1% 1/4W
R140	1-215-493-00	s METAL 1M 1% 1/4W
R141	1-215-469-00	s METAL 100K 1% 1/4W
R142	1-215-469-00	s METAL 100K 1% 1/4W
R143	1-215-453-00	s METAL 22K 1% 1/4W
R144	1-215-453-00	s METAL 22K 1% 1/4W
R145	1-215-390-00	s METAL 51 1% 1/4W
R146	1-215-390-00	s METAL 51 1% 1/4W
R147	1-215-493-00	s METAL 1M 1% 1/4W
R201	1-215-471-00	s METAL 120K 1% 1/4W
R202	1-215-471-00	s METAL 120K 1% 1/4W
R203	1-215-437-00	s METAL 4.7K 1% 1/4W
R204	1-215-425-00	s METAL 1.5K 1% 1/4W
R205	1-215-437-00	s METAL 4.7K 1% 1/4W
R206	1-215-485-00	s METAL 470K 1% 1/4W
R207	1-215-485-00	s METAL 470K 1% 1/4W
R208	1-215-449-00	s METAL 15K 1% 1/4W
R209	1-215-453-00	s METAL 22K 1% 1/4W
R210	1-215-405-00	s METAL 220 1% 1/4W
R211	1-215-429-00	s METAL 2.2K 1% 1/4W
R212	1-215-405-00	s METAL 220 1% 1/4W
R213	1-215-429-00	s METAL 2.2K 1% 1/4W
R214	1-215-449-00	s METAL 15K 1% 1/4W
R215	1-215-453-00	s METAL 22K 1% 1/4W
R216	1-215-469-00	s METAL 100K 1% 1/4W
R217	1-215-421-00	s METAL 1K 1% 1/4W
R218	1-215-477-00	s METAL 220K 1% 1/4W
R219	1-215-421-00	s METAL 1K 1% 1/4W
R220	1-215-428-00	s METAL 2K 1% 1/4W
R221	1-215-445-00	s METAL 10K 1% 1/4W
R222	1-215-475-00	s METAL 180K 1% 1/4W

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Ref. No. or Q'ty	Part No.	SP Description
R223	1-215-445-00	s METAL 10K 1% 1/4W
R224	1-215-429-00	s METAL 2.2K 1% 1/4W
R225	1-215-467-00	s METAL 82K 1% 1/4W
R226	1-215-485-00	s METAL 470K 1% 1/6W
R227	1-249-417-11	s CARBON 1K 5% 1/4W
R228	1-249-441-11	s CARBON 100K 5% 1/4W
R229	1-215-469-00	s METAL 100K 1% 1/4W
R230	1-215-445-00	s METAL 10K 1% 1/4W
R231	1-215-445-00	s METAL 10K 1% 1/4W
R232	1-215-469-00	s METAL 100K 1% 1/4W
R233	1-249-435-11	s CARBON 33K 5% 1/4W
R234	1-249-417-11	s CARBON 1K 5% 1/4W
R235	1-249-441-11	s CARBON 100K 5% 1/4W
R236	1-249-441-11	s CARBON 100K 5% 1/4W
R237	1-215-421-00	s METAL 1K 1% 1/4W
R238	1-215-421-00	s METAL 1K 1% 1/4W
R239	1-215-469-00	s METAL 100K 1% 1/4W
R240	1-215-493-00	s METAL 1M 1% 1/4W
R241	1-215-469-00	s METAL 100K 1% 1/4W
R242	1-215-469-00	s METAL 100K 1% 1/4W
R243	1-215-453-00	s METAL 22K 1% 1/4W
R244	1-215-453-00	s METAL 22K 1% 1/4W
R245	1-215-390-00	s METAL 51 1% 1/4W
R246	1-215-390-00	s METAL 51 1% 1/4W
R247	1-215-493-00	s METAL 1M 1% 1/4W
R301	1-215-493-00	s METAL 1M 1% 1/4W
R302	1-215-485-00	s METAL 470K 1% 1/4W
R303	1-215-476-00	s METAL 200K 1% 1/4W
R304	1-215-429-00	s METAL 2.2K 1% 1/4W
R305	1-215-426-00	s METAL 1.6K 1% 1/4W
R306	1-215-426-00	s METAL 1.6K 1% 1/4W
R307	1-215-426-00	s METAL 1.6K 1% 1/4W
R308	1-215-445-00	s METAL 10K 1% 1/4W
R309	1-215-445-00	s METAL 10K 1% 1/4W
R310	1-215-469-00	s METAL 100K 1% 1/4W
R311	1-215-445-00	s METAL 10K 1% 1/4W
R312	1-215-445-00	s METAL 10K 1% 1/4W
R313	1-215-429-00	s METAL 2.2K 1% 1/4W
R314	1-215-467-00	s METAL 82K 1% 1/4W
R315	1-215-485-00	s METAL 470K 1% 1/4W
R316	1-249-417-11	s CARBON 1K 5% 1/4W
R317	1-249-441-11	s CARBON 100K 5% 1/4W
R318	1-215-445-00	s METAL 10K 1% 1/6W
R319	1-215-439-00	s METAL 5.6K 1% 1/6W
R320	1-215-469-00	s METAL 100K 1% 1/6W
R321	1-215-425-00	s METAL 1.5K 1% 1/6W
R322	1-215-469-00	s METAL 100K 1% 1/6W
R323	1-215-469-00	s METAL 100K 1% 1/6W
R324	1-215-445-00	s METAL 10K 1% 1/6W
R325	1-215-445-00	s METAL 10K 1% 1/6W
R326	1-215-444-00	s METAL 9.1K 1% 1/6W
R327	1-215-418-00	s METAL 750 1% 1/6W
R328	1-215-445-00	s METAL 10K 1% 1/6W
R329	1-215-445-00	s METAL 10K 1% 1/6W
R330	1-215-453-00	s METAL 22K 1% 1/6W
R331	1-215-425-00	s METAL 1.5K 1% 1/6W
R332	1-215-425-00	s METAL 1.5K 1% 1/6W
R333	1-215-453-00	s METAL 22K 1% 1/6W
R334	1-215-453-00	s METAL 22K 1% 1/6W

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

(ADA-18 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R335	1-215-425-00	s METAL 1.5K 1% 1/6W
R336	1-215-425-00	s METAL 1.5K 1% 1/6W
R337	1-215-453-00	s METAL 22K 1% 1/6W
R338	1-214-810-00	s METAL 5.6 1% 1/2W
R339	1-214-810-00	s METAL 5.6 1% 1/2W
R340	1-214-810-00	s METAL 5.6 1% 1/2W
R341	1-214-810-00	s METAL 5.6 1% 1/2W
R342	1-214-852-00	s METAL 330 1% 1/2W
R343	1-214-824-91	s METAL 22 1% 1/2W
R344	1-214-839-00	s METAL 91 1% 1/2W
R345	1-214-839-00	s METAL 91 1% 1/2W
R346	1-214-824-91	s METAL 22 1% 1/2W
R347	1-214-852-00	s METAL 330 1% 1/2W
R348	1-215-452-00	s METAL 20K 1% 1/6W
R349	1-215-421-00	s METAL 1K 1% 1/6W
R350	1-215-452-00	s METAL 20K 1% 1/6W
R351	1-215-421-00	s METAL 1K 1% 1/6W
R352	1-215-469-00	s METAL 100K 1% 1/6W
R353	1-215-416-00	s METAL 620 1% 1/6W
R354	1-215-438-00	s METAL 5.1K 1% 1/6W
R355	1-215-449-00	s METAL 15K 1% 1/6W
R356	1-215-445-00	s METAL 10K 1% 1/6W
R357	1-215-445-00	s METAL 10K 1% 1/6W
R358	1-215-469-00	s METAL 100K 1% 1/6W
R359	1-214-844-00	s METAL 150 1% 1/2W
R360	1-215-441-00	s METAL 6.8K 1% 1/6W
R361	1-215-485-00	s METAL 470K 1% 1/6W
R362	1-215-421-00	s METAL 1K 1% 1/6W
R363	1-215-423-00	s METAL 1.2K 1% 1/6W
R364	1-215-445-00	s METAL 10K 1% 1/6W
R365	1-215-469-00	s METAL 100K 1% 1/6W
R366	1-214-844-00	s METAL 150 1% 1/2W
R401	1-215-493-00	s METAL 1M 1% 1/6W
R402	1-215-485-00	s METAL 470K 1% 1/6W
R403	1-215-476-00	s METAL 200K 1% 1/6W
R404	1-215-429-00	s METAL 2.2K 1% 1/6W
R405	1-215-426-00	s METAL 1.6K 1% 1/6W
R406	1-215-426-00	s METAL 1.6K 1% 1/6W
R407	1-215-426-00	s METAL 1.6K 1% 1/6W
R408	1-215-445-00	s METAL 10K 1% 1/6W
R409	1-215-445-00	s METAL 10K 1% 1/6W
R410	1-215-469-00	s METAL 100K 1% 1/6W
R411	1-215-445-00	s METAL 10K 1% 1/6W
R412	1-215-445-00	s METAL 10K 1% 1/6W
R413	1-215-429-00	s METAL 2.2K 1% 1/6W
R414	1-215-467-00	s METAL 82K 1% 1/6W
R415	1-215-485-00	s METAL 470K 1% 1/6W
R416	1-249-417-11	s CARBON 1K 5% 1/4W
R417	1-249-441-11	s CARBON 100K 5% 1/4W
R418	1-215-445-00	s METAL 10K 1% 1/6W
R419	1-215-439-00	s METAL 5.6K 1% 1/6W
R420	1-215-469-00	s METAL 100K 1% 1/6W
R421	1-215-425-00	s METAL 1.5K 1% 1/6W
R422	1-215-469-00	s METAL 100K 1% 1/6W
R423	1-215-469-00	s METAL 100K 1% 1/6W
R424	1-215-445-00	s METAL 10K 1% 1/6W
R425	1-215-445-00	s METAL 10K 1% 1/6W
R426	1-215-444-00	s METAL 9.1K 1% 1/6W
R427	1-215-418-00	s METAL 750 1% 1/6W

(ADA-18 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R428	1-215-445-00	s METAL 10K 1% 1/6W
R429	1-215-445-00	s METAL 10K 1% 1/6W
R430	1-215-453-00	s METAL 22K 1% 1/6W
R431	1-215-425-00	s METAL 1.5K 1% 1/6W
R432	1-215-425-00	s METAL 1.5K 1% 1/6W
R433	1-215-453-00	s METAL 22K 1% 1/6W
R434	1-215-453-00	s METAL 22K 1% 1/6W
R435	1-215-425-00	s METAL 1.5K 1% 1/6W
R436	1-215-425-00	s METAL 1.5K 1% 1/6W
R437	1-215-453-00	s METAL 22K 1% 1/6W
R438	1-214-810-00	s METAL 5.6 1% 1/2W
R439	1-214-810-00	s METAL 5.6 1% 1/2W
R440	1-214-810-00	s METAL 5.6 1% 1/2W
R441	1-214-810-00	s METAL 5.6 1% 1/2W
R442	1-214-852-00	s METAL 330 1% 1/2W
R443	1-214-824-91	s METAL 22 1% 1/2W
R444	1-214-839-00	s METAL 91 1% 1/2W
R445	1-214-839-00	s METAL 91 1% 1/2W
R446	1-214-824-91	s METAL 22 1% 1/2W
R447	1-214-852-00	s METAL 330 1% 1/2W
R448	1-215-452-00	s METAL 20K 1% 1/6W
R449	1-215-421-00	s METAL 1K 1% 1/6W
R450	1-215-452-00	s METAL 20K 1% 1/6W
R451	1-215-421-00	s METAL 1K 1% 1/6W
R452	1-215-469-00	s METAL 100K 1% 1/6W
R453	1-215-416-00	s METAL 620 1% 1/6W
R454	1-215-438-00	s METAL 5.1K 1% 1/6W
R455	1-215-449-00	s METAL 15K 1% 1/6W
R456	1-215-445-00	s METAL 10K 1% 1/6W
R457	1-215-445-00	s METAL 10K 1% 1/6W
R458	1-215-469-00	s METAL 100K 1% 1/6W
R459	1-214-844-00	s METAL 150 1% 1/2W
R460	1-215-441-00	s METAL 6.8K 1% 1/6W
R461	1-215-485-00	s METAL 470K 1% 1/6W
R462	1-215-421-00	s METAL 1K 1% 1/6W
R463	1-215-423-00	s METAL 1.2K 1% 1/6W
R464	1-215-445-00	s METAL 10K 1% 1/6W
R465	1-215-469-00	s METAL 100K 1% 1/6W
R466	1-214-844-00	s METAL 150 1% 1/2W
R501	1-249-397-11	s CARBON 22 5% 1/4W
R502	1-249-397-11	s CARBON 22 5% 1/4W
R503	1-249-397-11	s CARBON 22 5% 1/4W
R505	1-215-397-00	s METAL 100 1% 1/6W
R506	1-215-397-00	s METAL 100 1% 1/6W
R507	1-215-397-00	s METAL 100 1% 1/6W
R508	1-215-397-00	s METAL 100 1% 1/6W
R509	1-215-421-00	s METAL 1K 1% 1/6W
R510	1-215-397-00	s METAL 100 1% 1/6W
R511	1-215-421-00	s METAL 1K 1% 1/6W
R512	1-215-397-00	s METAL 100 1% 1/6W
R513	1-215-445-00	s METAL 10K 1% 1/6W
R514	1-215-445-00	s METAL 10K 1% 1/6W
R515	1-215-453-00	s METAL 22K 1% 1/6W
R516	1-215-453-00	s METAL 22K 1% 1/6W
R517	1-215-475-00	s METAL 180 1% 1/6W
RV101	1-238-803-11	s RES, ADJ, CERMET 20K
RV102	1-238-803-11	s RES, ADJ, CERMET 20K
RV201	1-238-803-11	s RES, ADJ, CERMET 20K
RV202	1-238-803-11	s RES, ADJ, CERMET 20K

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

(ADA-18 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
RV301	1-238-805-11	s RES, ADJ, CERMET 100K
RV302	1-238-802-11	s RES, ADJ, CERMET 10K
RV303	1-238-803-11	s RES, ADJ, CERMET 20K
RV401	1-238-805-11	s RES, ADJ, CERMET 100K
RV402	1-238-802-11	s RES, ADJ, CERMET 10K
RV403	1-238-803-11	s RES, ADJ, CERMET 20K
RY1	1-515-677-11	s RELAY
RY2	1-515-677-11	s RELAY
RY301	1-515-677-11	s RELAY
RY401	1-515-677-11	s RELAY
S1	1-553-977-00	s SWITCH, SLIDE
S101	1-552-573-00	s SWITCH, SLIDE
S201	1-552-573-00	s SWITCH, SLIDE
S301	1-552-573-00	s SWITCH, SLIDE
S401	1-552-573-00	s SWITCH, SLIDE

CP-157A/CP-157B BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-637-277-11	o PC BOARD, CP-157A
C1	1-101-004-00	s CERAMIC 0.01uF 50V0%
C2	1-102-973-00	s CERAMIC 100PF 5% 50V
C3	1-102-973-00	s CERAMIC 100PF 5% 50V
CN1	1-565-282-11	o CONNECTOR, XLR 3P, FEMALE

CP-158 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-637-282-12	o PC BOARD, CP-158
1pc	7-682-547-04	s SCREW +B 3X6
C1,C2	1-101-004-00	s CERAMIC 0.01uF 50V0% (Up to Serial No. J:10095, UC:20045, EK:50200)
CN1	1-506-469-11	s CONNECTOR, 4P, MALE
FB1	1-412-694-11	s INDUCTOR, BEAD
FB2	1-412-694-11	s INDUCTOR, BEAD
FB3	1-412-694-11	s INDUCTOR, BEAD
FB4	1-412-694-11	s INDUCTOR, BEAD
J1	1-507-863-51	s JACK, PHONE
J2	1-507-863-51	s JACK, PHONE

CP-171 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-637-276-11	o PC BOARD, CP-171
CN1	1-506-472-11	o CONNECTOR, 7P, MALE
CN2	1-506-472-11	o CONNECTOR, 7P, MALE
CN3	1-506-473-11	s CONNECTOR, 8P, MALE
CN4	1-506-473-11	s CONNECTOR, 8P, MALE
CN5	1-506-469-11	s CONNECTOR, 4P, MALE
CN6	1-506-469-11	s CONNECTOR, 4P, MALE
CN7	1-506-471-11	s CONNECTOR, 6P, MALE
CN8	1-506-471-11	s CONNECTOR, 6P, MALE
CN9	1-506-477-11	s CONNECTOR, 12P, MALE
CN10	1-506-477-11	s CONNECTOR, 12P, MALE
CN11	1-506-478-11	s CONNECTOR, 13P, MALE
CN12	1-506-478-11	s CONNECTOR, 13P, MALE

NOTE : Please see pages E-27 for the parts that
are not listed in the parts list.

CP-172A/CP-172C BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-637-280-11	o PC BOARD, CP-172A
C1	1-101-004-00	s CERAMIC 0.01uF 50V0% (For CP-172A)
	1-102-973-00	s CERAMIC 100PF 5% 50V (For CP-172C)
C2	1-102-973-00	s CERAMIC 100PF 5% 50V (For CP-172A)
	1-101-004-00	s CERAMIC 0.01uF 50V0% (For CP-172C)
C3	1-102-973-00	s CERAMIC 100PF 5% 50V
CN1	1-565-281-11	o CONNECTOR, XLR 3P, MALE
CN2	1-506-468-11	s CONNECTOR, 3P, MALE

CP-172B/CP-172D BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-637-281-11	o PC BOARD, CP-172B
C1	1-101-004-00	s CERAMIC 0.01uF 50V0% (For CP-172B)
	1-102-973-00	s CERAMIC 100PF 5% 50V (For CP-172D)
C2	1-102-973-00	s CERAMIC 100PF 5% 50V (For CP-172B)
	1-101-004-00	s CERAMIC 0.01uF 50V0% (For CP-172D)
C3	1-102-973-00	s CERAMIC 100PF 5% 50V
CN1	1-565-281-11	o CONNECTOR, XLR 3P, MALE
CN2	1-506-468-11	s CONNECTOR, 3P, MALE

DC-47 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7850-817-A	o COMPLETE PCB, DC-47 (This assembly includes the following parts.)
C1	1-124-921-61	s ELECT 470uF 20% 63VW
C2	1-126-163-11	s ELECT 4.7MF 20% 50V
C3	1-124-911-11	s ELECT 220uF 20% 50V
C4	1-130-495-00	s MYLAR 0.1uF 5% 50V
C5	1-130-495-00	s MYLAR 0.1uF 5% 50V
CN1	1-564-243-00	o PIN, CONNECTOR 6P
CN2	1-564-242-00	o PIN, CONNECTOR 5P
CN3	1-564-706-11	o PIN HEADER, STRAIGHT 4P
CN4	1-564-210-00	o PIN HEADER, STRAIGHT 12P
CN5	1-564-705-11	o PIN HEADER, STRAIGHT 3P
CN6	1-564-209-00	o PIN HEADER, STRAIGHT 10P
CN7	1-564-709-11	o PIN HEADER, STRAIGHT 7P
CN8	1-564-707-11	o CONNECTOR, 5P, MALE
CN9	1-506-469-11	s CONNECTOR, 4P, MALE
D1	8-719-200-02	s DIODE 10E2
D2	8-719-200-02	s DIODE 10E2
D3	8-719-200-02	s DIODE 10E2
D4	8-719-200-02	s DIODE 10E2
D5	8-719-934-25	s DIODE HZS33-1L
D6	8-719-200-02	s DIODE 10E2
D7	8-719-910-61	s DIODE HZ6A1L
Q1	8-729-400-81	s TRANSISTOR 2SD1266-Q
R1	Δ1-212-865-00	s FUSIBLE 22 5% 1/4W
R2	1-249-429-11	s CARBON 10K 5% 1/4W
R3	1-249-433-11	s CARBON 22K 5% 1/4W
R4	1-249-409-11	s CARBON 220 5% 1/4W
R5	1-249-409-11	s CARBON 220 5% 1/4W

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

DR-139 BOARD

Ref. No.

or Q'ty Part No. SP Description

1pc A-7850-783-A o COMPLETE PCB, DR-139
(This assembly includes the following part.)

C102	1-135-177-21	s TANTAL 1uF 20% 25VOW
C103	1-135-177-21	s TANTAL 1uF 20% 25VOW
C104	1-135-177-21	s TANTAL 1uF 20% 25VOW
C106	1-163-024-00	s CERAMIC 0.018uF 10% 50VOW
C107	1-135-177-21	s TANTAL 1uF 20% 25VOW
C108	1-135-177-21	s TANTAL 1uF 20% 25VOW
C109	1-135-177-21	s TANTAL 1uF 20% 25VOW
C110	1-135-177-21	s TANTAL 1uF 20% 25VOW
C112	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C113	1-124-589-11	s ELECT 47uF 20% 16V
C114	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C115	1-126-103-11	s ELECT 470uF 20% 16V
C117	1-135-177-21	s TANTAL 1uF 20% 25VOW
C121	1-135-177-21	s TANTAL 1uF 20% 25VOW
C122	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C123	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C124	1-124-589-11	s ELECT 47uF 20% 16V
C125	1-124-589-11	s ELECT 47uF 20% 16V
C126	1-124-589-11	s ELECT 47uF 20% 16V
C132	1-124-589-11	s ELECT 47uF 20% 16V
C133	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C134	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C136	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C137	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C201	1-125-675-11	s CAP 0.043PF
C202	1-125-675-11	s CAP 0.043PF
C203	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C204	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C205	1-124-257-00	s ELECT 2.2uF 20% 50V
C206	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C207	1-124-589-11	s ELECT 47uF 20% 16V
C208	1-126-157-11	s ELECT 10uF 20% 16V
C209	1-124-589-11	s ELECT 47uF 20% 16V
C210	1-126-157-11	s ELECT 10uF 20% 16V
C211	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C212	1-164-161-11	s CERAMIC, CHIP 0.0022uF 10% 100V
C213	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C214	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C215	1-164-161-11	s CERAMIC, CHIP 0.0022uF 10% 100V
C216	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C217	1-126-176-11	s ELECT 220uF 20% 10V
C218	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C219	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C220	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C221	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C222	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
CN101	1-563-370-11	o CONNECTOR, F,P,C 14P
CN102	1-506-478-11	s CONNECTOR, 13P, MALE
CN103	1-564-515-11	o PLUG, CONNECTOR 12P
CN104	1-563-597-11	s CONNECTOR, FLEXIBLE 20P
CN105	1-565-568-11	o PIN, CONNECTOR (PC BOARD) 2P
CN106	1-506-470-11	s CONNECTOR, 5P, MALE
CN107	1-564-505-11	o PLUG, CONNECTOR 2P
CN108	1-565-189-11	s CONNECTOR, FPC 36P
CN109	1-564-707-11	o CONNECTOR, 5P, MALE

(DR-139 BOARD)

Ref. No.

or Q'ty Part No. SP Description

D201	8-719-981-00	s DIODE ERC81-004
D202	8-719-400-18	s DIODE MA152WK
D203	8-719-400-18	s DIODE MA152WK
D204	8-719-400-18	s DIODE MA152WK
D205	8-719-400-18	s DIODE MA152WK
D206	8-719-400-18	s DIODE MA152WK
D207	8-719-400-18	s DIODE MA152WK
D208	8-719-200-77	s DIODE 10E2N
D209	8-719-400-18	s DIODE MA152WK
D210	8-719-400-18	s DIODE MA152WK
IC101	8-752-039-31	s IC CXA1418N
IC102	8-752-017-40	s IC CX20174
IC103	8-759-983-69	s IC LM358PS
IC104	8-759-300-71	s IC HD14053BFP
IC105	1-464-940-11	s DRIVE UNIT, MOTOR
IC106	8-759-925-80	s IC SN74HC14ANS
IC107	8-759-239-23	s IC TC74HC86AF
IC201	8-759-908-81	s IC MB3763PF
IC202	8-759-925-76	s IC SN74HC08ANS
IC203	8-759-908-81	s IC MB3763PF
IC204	8-759-989-91	s IC TL7705ACPS
IC205	8-759-008-67	s IC MC14066BF
IC206	8-759-929-26	s IC TL431CPS
IC207	8-759-983-69	s IC LM358PS
IC208	8-759-988-13	s IC LM393PS
IC209	8-759-988-13	s IC LM393PS
L101	1-408-425-00	s INDUCTOR 220uH
L102	1-412-533-11	s COIL 47uH
L103	1-412-533-11	s COIL 47uH
L201	1-408-425-00	s INDUCTOR 220uH
Q101	8-729-901-00	s TRANSISTOR DTC124EK
Q102	8-729-901-00	s TRANSISTOR DTC124EK
Q103	8-729-216-22	s TRANSISTOR 2SA1162
Q104	8-729-208-96	s TRANSISTOR 2SA1242-Y
Q105	8-729-202-62	s TRANSISTOR 2SD1221
Q201	8-729-901-00	s TRANSISTOR DTC124EK
Q202	8-729-901-00	s TRANSISTOR DTC124EK
Q203	8-729-901-00	s TRANSISTOR DTC124EK
Q204	8-729-901-00	s TRANSISTOR DTC124EK
Q205	8-729-901-00	s TRANSISTOR DTC124EK
Q206	8-729-901-00	s TRANSISTOR DTC124EK
Q207	8-729-104-93	s TRANSISTOR 2SB1040A-3
Q208	8-729-202-62	s TRANSISTOR 2SD1221
Q209	8-729-923-54	s TRANSISTOR DTA143TK
Q210	8-729-923-54	s TRANSISTOR DTA143TK
R104	1-216-666-11	s METAL, CHIP 4.3K 0.5% 1/10W
R105	1-216-075-00	s METAL, CHIP 12K 5% 1/10W
R106	1-216-093-00	s METAL, CHIP 68K 5% 1/10W
R121	1-216-687-11	s METAL, CHIP 33K 0.5% 1/10W
R122	1-216-687-11	s METAL, CHIP 33K 0.5% 1/10W
R124	1-216-646-11	s METAL, CHIP 620 0.5% 1/10W
R128	1-216-113-00	s METAL, CHIP 470K 5% 1/10W
R217	1-216-470-00	s METAL 18 5% 3W
R219	1-216-662-11	s METAL, CHIP 3K 0.5% 1/10W
R220	1-216-677-11	s METAL, CHIP 12K 0.5% 1/10W
R239	1-216-666-11	s METAL, CHIP 4.3K 0.5% 1/10W
R240	1-216-047-00	s METAL, CHIP 820 5% 1/10W

NOTE : Please see pages E-27 for the parts that
are not listed in the parts list.

(DR-139 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R241	1-216-686-11	s METAL, CHIP 30K 0.5% 1/10W
R244	1-216-115-00	s METAL, CHIP 560K 5% 1/10W
RB1	1-231-411-00	s RESISTOR BLOCK 100Kx8
RB2	1-231-557-00	s RESISTOR BLOCK 100Kx4
RV101	1-238-804-21	s RES, ADJ, CERMET 50K
RV102	1-238-804-21	s RES, ADJ, CERMET 50K
RV103	1-238-804-21	s RES, ADJ, CERMET 50K
SW201	1-570-602-11	s SWITCH, DIP 2-CKT
SW202	1-570-602-11	s SWITCH, DIP 2-CKT

HP-48 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-506-847-11	o HOUSING, BOARD IN CONNECTOR 10P
1pc	1-563-184-11	o HOUSING, CONNECTOR 10P
1pc	1-637-283-14	o PC BOARD, HP-48
C1	1-161-379-00	s CERAMIC, 0.01uF 20% 25V
C2	1-161-379-00	s CERAMIC, 0.01uF 20% 25V
FB1	1-412-694-11	s INDUCTOR, BEAD
FB2	1-412-694-11	s INDUCTOR, BEAD
FB3	1-412-694-11	s INDUCTOR, BEAD

KY-192 BOARD

Ref. No.
or Q'ty Part No. SP Description

This board includes the LED-104, SW-420 boards.

1pc A-7850-797-A o COMPLETE PCB, KY-192
(This assembly includes the following parts.)

1pc	1-466-469-11	s ROTARY ENCODER (MAGNETIC)
1pc	3-167-806-01	o TABLE, ENCODER
1pc	7-682-903-11	s SCREW +PWH 3X6
4pcs	7-685-132-19	s SCREW +P 2.6X5 TYPE2 N-S
1pc	7-685-903-11	s SCREW +PTPWH 3X8 (TYPE2)
C4	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C6	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C7	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C8	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C9	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C10	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C11	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C12	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C13	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C14	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C15	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C17	1-161-379-00	s CERAMIC 0.01uF 20% 25V
C18	1-161-379-00	s CERAMIC 0.01uF 20% 25V
CN1	1-506-475-11	s CONNECTOR, 10P, MALE
CN2	1-506-473-11	s CONNECTOR, 8P, MALE
CN3	1-506-473-11	s CONNECTOR, 8P, MALE
CN4	1-506-475-11	s CONNECTOR, 10P, MALE
CN5	1-506-475-11	s CONNECTOR, 10P, MALE
CN6	1-566-982-11	o PIN HEADER, STRAIGHT 9P
CN7	1-506-474-11	s CONNECTOR, 9P, MALE
D1	8-719-911-19	s DIODE 1SS119
D2	8-719-911-19	s DIODE 1SS119
D3	8-719-911-19	s DIODE 1SS119
D4	8-719-911-19	s DIODE 1SS119
D5	8-719-911-19	s DIODE 1SS119
D6	8-719-911-19	s DIODE 1SS119
D7	8-719-911-19	s DIODE 1SS119
D8	8-719-911-19	s DIODE 1SS119
D9	8-719-911-19	s DIODE 1SS119
D10	8-719-911-19	s DIODE 1SS119
D11	8-719-911-19	s DIODE 1SS119
D12	8-719-911-19	s DIODE 1SS119
D13	8-719-911-19	s DIODE 1SS119
D14	8-719-911-19	s DIODE 1SS119
D15	8-719-911-19	s DIODE 1SS119
D16	8-719-911-19	s DIODE 1SS119
D17	8-719-911-19	s DIODE 1SS119
D18	8-719-911-19	s DIODE 1SS119
D19	8-719-911-19	s DIODE 1SS119
D20	8-719-911-19	s DIODE 1SS119
D21	8-719-911-19	s DIODE 1SS119
D22	8-719-911-19	s DIODE 1SS119
D23	8-719-911-19	s DIODE 1SS119
D24	8-719-911-19	s DIODE 1SS119
D25	8-719-911-19	s DIODE 1SS119
D26	8-719-911-19	s DIODE 1SS119
D27	8-719-911-19	s DIODE 1SS119
D28	8-719-911-19	s DIODE 1SS119

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

(KY-192 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
D29	8-719-988-10	s DIODE EBG5734S
D30	8-719-988-10	s DIODE EBG5734S
D31	8-719-988-10	s DIODE EBG5734S
D32	8-719-988-10	s DIODE EBG5734S
D33	8-719-988-10	s DIODE EBG5734S
D34	8-719-988-10	s DIODE EBG5734S
D35	8-719-988-10	s DIODE EBG5734S
D36	8-719-988-10	s DIODE EBG5734S
D37	8-719-988-10	s DIODE EBG5734S
D38	8-719-988-10	s DIODE EBG5734S
D39	8-719-988-09	s DIODE PY5734S
D40	8-719-988-10	s DIODE EBG5734S
D41	8-719-988-10	s DIODE EBG5734S
D53	8-719-911-19	s DIODE 1SS119
D54	8-719-911-19	s DIODE 1SS119
D55	8-719-911-19	s DIODE 1SS119
D56	8-719-911-19	s DIODE 1SS119
FB1	1-535-178-00	s BEAD, FERRITE
FL1	1-519-642-11	s INDICATOR TUBE, FLUORESCENT
IC1	8-759-926-11	s IC SN74HC138ANS
IC2	8-759-926-77	s IC SN74HC541ANS
IC3	8-759-926-77	s IC SN74HC541ANS
IC4	8-759-500-05	s IC MSM6338MS-K
IC5	8-759-927-46	s IC SN74HC00ANS
IC6	8-759-513-50	s IC MSC62408-018GS-V1K
IC7	8-759-205-37	s IC TC74HC574F
IC8	8-759-205-37	s IC TC74HC574F
IC9	8-759-205-37	s IC TC74HC574F
IC10	8-759-205-37	s IC TC74HC574F
JW5	1-217-666-31	s RES, SHORT 0.01 1/6W
JW12	1-217-666-31	s RES, SHORT 0.01 1/6W
JW117	1-217-666-31	s RES, SHORT 0.01 1/6W
JW118	1-217-666-31	s RES, SHORT 0.01 1/6W
L1	1-412-533-11	s COIL 47uH
L2	1-412-533-11	s COIL 47uH
Q1	8-729-900-98	s TRANSISTOR DTC143TK
Q2	8-729-900-98	s TRANSISTOR DTC143TK
Q3	8-729-900-98	s TRANSISTOR DTC143TK
Q4	8-729-900-98	s TRANSISTOR DTC143TK
Q5	8-729-900-98	s TRANSISTOR DTC143TK
Q6	8-729-900-98	s TRANSISTOR DTC143TK
Q7	8-729-900-98	s TRANSISTOR DTC143TK
Q8	8-729-900-98	s TRANSISTOR DTC143TK
Q9	8-729-900-98	s TRANSISTOR DTC143TK
Q10	8-729-901-04	s TRANSISTOR DTA114EK
Q11	8-729-901-47	s TRANSISTOR DTA143EK
Q12	8-729-901-47	s TRANSISTOR DTA143EK
Q13	8-729-901-04	s TRANSISTOR DTA114EK
Q14	8-729-901-47	s TRANSISTOR DTA143EK
Q15	8-729-901-47	s TRANSISTOR DTA143EK
Q16	8-729-901-47	s TRANSISTOR DTA143EK
Q17	8-729-901-04	s TRANSISTOR DTA114EK
Q18	8-729-901-04	s TRANSISTOR DTA114EK
Q19	8-729-901-04	s TRANSISTOR DTA114EK
Q20	8-729-901-04	s TRANSISTOR DTA114EK
Q21	8-729-901-04	s TRANSISTOR DTA114EK

(KY-192 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
Q22	8-729-901-04	s TRANSISTOR DTA114EK
Q23	8-729-901-04	s TRANSISTOR DTA114EK
Q24	8-729-901-04	s TRANSISTOR DTA114EK
Q25	8-729-901-04	s TRANSISTOR DTA114EK
Q26	8-729-901-04	s TRANSISTOR DTA114EK
Q27	8-729-901-04	s TRANSISTOR DTA114EK
Q28	8-729-901-04	s TRANSISTOR DTA114EK
Q29	8-729-901-04	s TRANSISTOR DTA114EK
Q30	8-729-901-04	s TRANSISTOR DTA114EK
Q31	8-729-901-04	s TRANSISTOR DTA114EK
Q32	8-729-901-04	s TRANSISTOR DTA114EK
Q33	8-729-901-04	s TRANSISTOR DTA114EK
Q34	8-729-901-04	s TRANSISTOR DTA114EK
Q35	8-729-901-04	s TRANSISTOR DTA114EK
Q36	8-729-901-04	s TRANSISTOR DTA114EK
R1	1-249-441-11	s CARBON 100K 5% 1/4W
R2	1-249-441-11	s CARBON 100K 5% 1/4W
R3	1-249-441-11	s CARBON 100K 5% 1/4W
R4	1-249-441-11	s CARBON 100K 5% 1/4W
R5	1-249-441-11	s CARBON 100K 5% 1/4W
R6	1-249-441-11	s CARBON 100K 5% 1/4W
R7	1-249-441-11	s CARBON 100K 5% 1/4W
R8	1-249-441-11	s CARBON 100K 5% 1/4W
R9	1-249-441-11	s CARBON 100K 5% 1/4W
R10	1-249-429-11	s CARBON 10K 5% 1/4W
R11	1-249-429-11	s CARBON 10K 5% 1/4W
R12	1-249-429-11	s CARBON 10K 5% 1/4W
R13	1-249-429-11	s CARBON 10K 5% 1/4W
R14	1-249-429-11	s CARBON 10K 5% 1/4W
R15	1-249-429-11	s CARBON 10K 5% 1/4W
R16	1-249-429-11	s CARBON 10K 5% 1/4W
R17	1-249-429-11	s CARBON 10K 5% 1/4W
R18	1-249-397-11	s CARBON 22 5% 1/4W
R19	1-249-403-11	s CARBON 68 5% 1/4W
R20	1-249-403-11	s CARBON 68 5% 1/4W
R21	1-249-397-11	s CARBON 22 5% 1/4W
R22	1-249-399-11	s CARBON 33 5% 1/4W
R23	1-249-399-11	s CARBON 33 5% 1/4W
R24	1-249-409-11	s CARBON 220 5% 1/4W
R25	1-249-408-11	s CARBON 180 5% 1/4W
R26	1-249-409-11	s CARBON 220 5% 1/4W
R27	1-249-409-11	s CARBON 220 5% 1/4W
R28	1-249-408-11	s CARBON 180 5% 1/4W
R29	1-249-408-11	s CARBON 180 5% 1/4W
R30	1-249-408-11	s CARBON 180 5% 1/4W
R31	1-249-397-11	s CARBON 22 5% 1/4W
R32	1-249-397-11	s CARBON 22 5% 1/4W
R33	1-249-408-11	s CARBON 180 5% 1/4W
R34	1-249-408-11	s CARBON 180 5% 1/4W
R35	1-249-408-11	s CARBON 180 5% 1/4W
R36	1-249-408-11	s CARBON 180 5% 1/4W
R37	1-249-408-11	s CARBON 180 5% 1/4W
R38	1-249-408-11	s CARBON 180 5% 1/4W
R39	1-249-408-11	s CARBON 180 5% 1/4W
R40	1-249-408-11	s CARBON 180 5% 1/4W
R41	1-249-408-11	s CARBON 180 5% 1/4W
R42	1-249-408-11	s CARBON 180 5% 1/4W
R43	1-249-408-11	s CARBON 180 5% 1/4W
R44	1-249-408-11	s CARBON 180 5% 1/4W

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

(KY-192 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
R45	1-249-405-11	s CARBON 100 5% 1/4W
R46	1-249-397-11	s CARBON 22 5% 1/4W
R47	1-249-397-11	s CARBON 22 5% 1/4W
R48	1-249-397-11	s CARBON 22 5% 1/4W
R49	1-249-405-11	s CARBON 100 5% 1/4W
R50	1-249-405-11	s CARBON 100 5% 1/4W
R51	1-249-405-11	s CARBON 100 5% 1/4W
R52	1-249-425-11	s CARBON 4.7K 5% 1/4W
R53	1-249-425-11	s CARBON 4.7K 5% 1/4W
R54	1-249-425-11	s CARBON 4.7K 5% 1/4W
R55	1-249-425-11	s CARBON 4.7K 5% 1/4W
R56	1-249-425-11	s CARBON 4.7K 5% 1/4W
R57	1-249-425-11	s CARBON 4.7K 5% 1/4W
R58	1-249-437-11	s CARBON 47K 5% 1/4W
R59	1-249-437-11	s CARBON 47K 5% 1/4W
R60	1-249-437-11	s CARBON 47K 5% 1/4W
R61	1-249-437-11	s CARBON 47K 5% 1/4W
R62	1-249-437-11	s CARBON 47K 5% 1/4W
R63	1-249-437-11	s CARBON 47K 5% 1/4W
R64	1-249-437-11	s CARBON 47K 5% 1/4W
R65	1-249-429-11	s CARBON 10K 5% 1/4W
R66	1-249-429-11	s CARBON 10K 5% 1/4W
R67	1-249-429-11	s CARBON 10K 5% 1/4W
R68	1-249-429-11	s CARBON 10K 5% 1/4W
R69	1-249-429-11	s CARBON 10K 5% 1/4W
R70	1-249-437-11	s CARBON 47K 5% 1/4W
R71	1-249-437-11	s CARBON 47K 5% 1/4W
R72	1-249-437-11	s CARBON 47K 5% 1/4W
R73	1-249-437-11	s CARBON 47K 5% 1/4W
R74	1-249-437-11	s CARBON 47K 5% 1/4W
S1	1-571-169-11	s SWITCH, WITH LED, TACTILE [EJECT]
S2	1-571-167-71	s SWITCH, TACTIL [STANDBY]
S3	1-572-609-21	s SWITCH, PUSH (ILLUMINATION) [STOP]
S4	1-572-607-21	s SWITCH, PUSH (ILLUMINATION) [REW]
S5	1-572-607-11	s SWITCH, PUSH (ILLUMINATION) [FF]
S6	1-554-937-11	s SWITCH, KEY BOARD
S7	1-572-609-11	s SWITCH, PUSH (ILLUMINATION) [PLAY]
S8	1-572-608-11	s SWITCH, PUSH (ILLUMINATION) [REC]
S9	1-571-167-81	s SWITCH, TACTIL [PREVIOUS]
S10	1-571-167-91	s SWITCH, TACTIL [NEXT]
S11	1-554-937-11	s SWITCH, KEY BOARD
S12	1-554-937-11	s SWITCH, KEY BOARD
S13	1-554-937-11	s SWITCH, KEY BOARD
S14	1-554-937-11	s SWITCH, KEY BOARD
S15	1-554-937-11	s SWITCH, KEY BOARD
S16	1-554-937-11	s SWITCH, KEY BOARD
S17	1-554-937-11	s SWITCH, KEY BOARD
S18	1-554-937-11	s SWITCH, KEY BOARD
S19	1-554-937-11	s SWITCH, KEY BOARD
S20	1-554-937-11	s SWITCH, KEY BOARD
S21	1-554-937-11	s SWITCH, KEY BOARD
S22	1-554-937-11	s SWITCH, KEY BOARD
S23	1-554-937-11	s SWITCH, KEY BOARD
S24	1-571-156-11	o SWITCH, TOGGLE
S25	1-571-157-11	o SWITCH, TOGGLE
S26	1-571-156-11	o SWITCH, TOGGLE
S27	1-571-156-11	o SWITCH, TOGGLE

LE-90A BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-637-285-12	o PC BOARD, LE-90A
D1	8-719-820-27	s DIODE TLY256

LE-90B BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-637-286-12	o PC BOARD, LE-90B
D1	8-719-820-27	s LED TLY-256, YEL

LED-104 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-637-269-11	o PC BOARD, LED-104
D44	8-719-812-41	s LED TLR124, RED
D45	8-719-812-41	s LED TLR124, RED
D46	8-719-934-33	s DIODE PY3432S
D47	8-719-902-26	s DIODE SLR-34PG5
D48	8-719-934-33	s DIODE PY3432S
JW1	1-535-901-11	o WIRE, JUMPER

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

PS-211 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7850-815-A	o COMPLETE PCB, PS-211
(This assembly includes the following parts.)		
2pcs	7-682-547-09	s SCREW +B 3X6
2pcs	7-682-903-11	s SCREW +PMW 3X6
C1	1-108-626-11	s MYLAR 0.01uF 10% 1000W
C2	1-108-626-11	s MYLAR 0.01uF 10% 1000W
C3	1-108-626-11	s MYLAR 0.01uF 10% 1000W
C4	1-108-626-11	s MYLAR 0.01uF 10% 1000W
C5	1-126-548-11	s ELECT 4700uF 20% 35VOW
C6	1-126-548-11	s ELECT 4700uF 20% 35VOW
C7	1-164-096-11	s CERAMIC 0.01uF 50V
C8	1-164-096-11	s CERAMIC 0.01uF 50V
C10	1-164-096-11	s CERAMIC 0.01uF 50V
C12	1-164-096-11	s CERAMIC 0.01uF 50V
C13	1-136-193-11	s FILM 0.47uF 5% 2500W
C14	1-136-193-11	s FILM 0.47uF 5% 2500W
C15	1-108-626-11	s MYLAR 0.01uF 10% 1000W
C16	1-108-626-11	s MYLAR 0.01uF 10% 1000W
C17	1-108-626-11	s MYLAR 0.01uF 10% 1000W
C18	1-108-626-11	s MYLAR 0.01uF 10% 1000W
C19	1-126-548-11	s ELECT 4700uF 20% 35VOW
C20	1-126-548-11	s ELECT 4700uF 20% 35VOW
C22	1-164-096-11	s CERAMIC 0.01uF 50V
C23	1-162-901-11	s CERAMIC 0.1uF 10% 50VOW
C24	1-164-096-11	s CERAMIC 0.01uF 50V
C27	1-164-096-11	s CERAMIC 0.01uF 50V
C28	1-162-901-11	s CERAMIC 0.1uF 10% 50VOW
C29	1-164-096-11	s CERAMIC 0.01uF 50V
C32	1-164-096-11	s CERAMIC 0.01uF 50V
C33	1-162-901-11	s CERAMIC 0.1uF 10% 50VOW
C34	1-164-096-11	s CERAMIC 0.01uF 50V
C37	1-164-096-11	s CERAMIC 0.01uF 50V
C38	1-162-901-11	s CERAMIC 0.1uF 10% 50VOW
C39	1-164-096-11	s CERAMIC 0.01uF 50V
C43	1-124-903-11	s ELECT 1uF 20% 50VOW
CN1	1-566-313-11	o PIN, CONNECTOR 7P
CN2	1-566-982-11	o PIN HEADER, STRAIGHT 9P
CN3	1-564-705-11	o PIN HEADER, STRAIGHT 3P
D1	8-719-200-02	s DIODE 10E2
D2	8-719-200-02	s DIODE 10E2
D3	8-719-200-02	s DIODE 10E2
D4	8-719-200-02	s DIODE 10E2
D5	8-719-200-02	s DIODE 10E2
D6	8-719-200-02	s DIODE 10E2
D7	8-719-200-02	s DIODE 10E2
D8	8-719-200-02	s DIODE 10E2
D9	8-719-109-81	s DIODE RD4.7ES-B2
D10	8-719-109-81	s DIODE RD4.7ES-B2
D11	8-719-109-81	s DIODE RD4.7ES-B2
D12	8-719-109-81	s DIODE RD4.7ES-B2
D13	8-719-200-02	s DIODE 10E2
D14	8-719-200-02	s DIODE 10E2
D15	8-719-200-02	s DIODE 10E2
D16	8-719-200-02	s DIODE 10E2
D17	8-719-110-41	s DIODE RD15ES-B2

(PS-211 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
D18	8-719-110-41	s DIODE RD15ES-B2
D19	8-719-911-19	s DIODE 1SS119
D20	8-719-110-53	s DIODE RD20ES-B2
D21	8-719-911-19	s DIODE 1SS119
D22	8-719-911-19	s DIODE 1SS119
IC1	8-759-154-55	s PS2601-L
IC2	8-759-982-15	s IC RC7815FA
IC3	8-759-982-41	s IC RC7915FA
IC4	8-759-982-17	s IC RC7818FA
IC5	8-759-982-42	s IC RC7918FA
IC6	8-759-982-17	s IC RC7818FA
IC7	8-759-982-42	s IC RC7918FA
Q1	8-729-202-35	s TRANSISTOR 2SB906-Y
Q2	8-729-202-35	s TRANSISTOR 2SB906-Y
Q3	8-729-202-62	s TRANSISTOR 2SD1221-Y
Q4	8-729-202-62	s TRANSISTOR 2SD1221-Y
Q5	8-729-202-35	s TRANSISTOR 2SB906-Y
Q6	8-729-202-35	s TRANSISTOR 2SB906-Y
Q7	8-729-202-62	s TRANSISTOR 2SD1221-Y
Q8	8-729-202-62	s TRANSISTOR 2SD1221-Y
Q9	8-729-142-25	s TRANSISTOR 2SD1020-HFE
Q10	8-729-142-25	s TRANSISTOR 2SD1020-HFE
Q11	8-729-900-36	s TRANSISTOR DTC124ES
R1	A1-212-934-00	s FUSIBLE 1 5% 1/2W
R2	A1-212-934-00	s FUSIBLE 1 5% 1/2W
R3	1-249-429-11	s CARBON 10K 5% 1/4W
R4	1-249-429-11	s CARBON 10K 5% 1/4W
R5	A1-212-873-11	s RES, FUSIBLE 47 1/4W
R6	1-214-676-00	s METAL 6.2 1% 1/4W
R7	1-207-667-00	s WIREWOUND 220 10% 3W
R8	1-249-429-11	s CARBON 10K 5% 1/4W
R9	1-249-433-11	s CARBON 22K 5% 1/4W
R10	1-249-431-11	s CARBON 15K 5% 1/4W
R11	1-214-676-00	s METAL 6.2 1% 1/4W
R12	1-207-667-00	s WIREWOUND 220 10% 3W
R13	1-249-433-11	s CARBON 22K 5% 1/4W
R14	1-249-429-11	s CARBON 10K 5% 1/4W
R15	1-249-431-11	s CARBON 15K 5% 1/4W
R16	1-214-676-00	s METAL 6.2 1% 1/4W
R17	1-207-667-00	s WIREWOUND 220 10% 3W
R18	1-249-429-11	s CARBON 10K 5% 1/4W
R19	1-249-433-11	s CARBON 22K 5% 1/4W
R20	1-249-431-11	s CARBON 15K 5% 1/4W
R21	1-214-676-00	s METAL 6.2 1% 1/4W
R22	1-207-667-00	s WIREWOUND 220 10% 3W
R23	1-249-433-11	s CARBON 22K 5% 1/4W
R24	1-249-429-11	s CARBON 10K 5% 1/4W
R25	1-249-431-11	s CARBON 15K 5% 1/4W
R26	1-249-427-11	s CARBON 6.8K 5% 1/4W
R27	1-249-427-11	s CARBON 6.8K 5% 1/4W
R28	1-249-427-11	s CARBON 6.8K 5% 1/4W
R29	1-249-435-11	s CARBON 33K 5% 1/4W
R30	1-249-437-11	s CARBON 47K 5% 1/4W
R31	1-249-419-11	s CARBON 1.5K 5% 1/4W
R32	1-249-429-11	s CARBON 10K 5% 1/4W
R33	1-249-429-11	s CARBON 10K 5% 1/4W
R34	1-249-423-11	s CARBON 3.3K 5% 1/4W

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

RF-31 BOARD

Ref. No.

or Q'ty Part No. SP Description

C3	1-135-125-21	s	TANTALUM, CHIP 33uF 20% 10V
C102	1-135-125-21	s	TANTALUM, CHIP 33uF 20% 10V
C103	1-162-927-11	s	CERAMIC, CHIP 100PF 5% 50V
C104	1-135-155-21	s	TANTAL CHIP 4.7uF 10% 16V
C105	1-162-962-11	s	CERAMIC 470PF 10% 50V
C107	1-162-957-11	s	CERAMIC 220PF 5% 50V
C108	1-162-964-11	s	CERAMIC 0.001uF 10% 50V
C112	1-162-957-11	s	CERAMIC 220PF 5% 50V
C113	1-162-957-11	s	CERAMIC 220PF 5% 50V
C115	1-135-125-21	s	TANTALUM, CHIP 33uF 20% 10V
C116	1-162-927-11	s	CERAMIC, CHIP 100PF 5% 50V
C117	1-135-073-00	s	TANTALUM, CHIP 0.33uF 10% 35V
C118	1-164-492-11	s	CERAMIC 0.15uF 10% 16V
C120	1-162-964-11	s	CERAMIC 0.001uF 10% 50V
C122	1-135-125-21	s	TANTALUM, CHIP 33uF 20% 10V
C124	1-135-125-21	s	TANTALUM, CHIP 33uF 20% 10V
C125	1-162-964-11	s	CERAMIC 0.001uF 10% 50V
C127	1-164-492-11	s	CERAMIC 0.15uF 10% 16V
C128	1-135-073-00	s	TANTALUM, CHIP 0.33uF 10% 35V
C129	1-162-927-11	s	CERAMIC, CHIP 100PF 5% 50V
C130	1-162-967-11	s	CERAMIC 0.0033uF 10% 50V
C132	1-135-125-21	s	TANTALUM, CHIP 33uF 20% 10V
C133	1-162-964-11	s	CERAMIC 0.001uF 10% 50V
C202	1-135-125-21	s	TANTALUM, CHIP 33uF 20% 10V
C203	1-162-927-11	s	CERAMIC, CHIP 100PF 5% 50V
C204	1-135-155-21	s	TANTAL CHIP 4.7uF 10% 16V
C205	1-162-962-11	s	CERAMIC 470PF 10% 50V
C207	1-162-957-11	s	CERAMIC 220PF 5% 50V
C212	1-162-957-11	s	CERAMIC 220PF 5% 50V
C213	1-162-957-11	s	CERAMIC 220PF 5% 50V
C215	1-135-125-21	s	TANTALUM, CHIP 33uF 20% 10V
C216	1-162-927-11	s	CERAMIC, CHIP 100PF 5% 50V
C217	1-135-073-00	s	TANTALUM, CHIP 0.33uF 10% 35V
C218	1-164-492-11	s	CERAMIC 0.15uF 10% 16V
C220	1-162-964-11	s	CERAMIC 0.001uF 10% 50V
C222	1-135-125-21	s	TANTALUM, CHIP 33uF 20% 10V
C224	1-135-125-21	s	TANTALUM, CHIP 33uF 20% 10V
C225	1-162-964-11	s	CERAMIC 0.001uF 10% 50V
C227	1-164-492-11	s	CERAMIC 0.15uF 10% 16V
C228	1-135-073-00	s	TANTALUM, CHIP 0.33uF 10% 35V
C229	1-162-927-11	s	CERAMIC, CHIP 100PF 5% 50V
C230	1-162-967-11	s	CERAMIC 0.0033uF 10% 50V
C232	1-135-125-21	s	TANTALUM, CHIP 33uF 20% 10V
C233	1-162-964-11	s	CERAMIC 0.001uF 10% 50V
CN1	1-566-838-11	o	CONNECTOR, F.P.C 15P
CN2	1-562-883-11	o	CONNECTOR, FPC 20P, FEMALE
CN3	1-562-708-11	o	CONNECTOR, FPC 13P, FEMALE
IC1	8-752-039-01	s	IC CXA1364R
IC2	8-752-039-01	s	IC CXA1364R
L1	1-408-785-21	s	INDUCTOR CHIP 47UH
L101	1-408-785-21	s	INDUCTOR CHIP 47UH
L102	1-408-785-21	s	INDUCTOR CHIP 47UH
L103	1-408-785-21	s	INDUCTOR CHIP 47UH
L201	1-408-785-21	s	INDUCTOR CHIP 47UH
L202	1-408-785-21	s	INDUCTOR CHIP 47UH
L203	1-408-785-21	s	INDUCTOR CHIP 47UH

(RF-31 BOARD)

Ref. No.

or Q'ty Part No. SP Description

Q101,	8-729-901-00	s	TRANSISTOR DTC124EK
Q201	(Up to Serial No. J:10105, UC:20115, EK:50580)		
R101	1-216-679-11	s	METAL, CHIP 15K 0.5% 1/10W
R102	1-216-693-11	s	METAL, CHIP 56K 0.5% 1/10W
R103	1-216-687-11	s	METAL, CHIP 33K 0.5% 1/10W
R104	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R105	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R106	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R107	1-216-836-11	s	METAL, CHIP 18K 5% 1/16W
R108	1-216-834-11	s	METAL, CHIP 12K 5% 1/16W
R109	1-216-836-11	s	METAL, CHIP 18K 5% 1/16W
R110	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R111	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R112	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R113	1-216-671-11	s	METAL, CHIP 6.8K 0.5% 1/10W
R114	1-216-671-11	s	METAL, CHIP 6.8K 0.5% 1/10W
R115	1-216-673-11	s	METAL, CHIP 8.2K 0.5% 1/10W
R116	1-216-673-11	s	METAL, CHIP 8.2K 0.5% 1/10W
R117	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
	(Up to Serial No. J:10105, UC:20115, EK:50580)		
R118	1-216-842-11	s	METAL, CHIP 56K 5% 1/16W
R119	1-216-683-11	s	METAL, CHIP 22K 0.5% 1/10W
R201	1-216-679-11	s	METAL, CHIP 15K 0.5% 1/10W
R202	1-216-693-11	s	METAL, CHIP 56K 0.5% 1/10W
R203	1-216-687-11	s	METAL, CHIP 33K 0.5% 1/10W
R204	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R205	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R206	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R207	1-216-836-11	s	METAL, CHIP 18K 5% 1/16W
R208	1-216-834-11	s	METAL, CHIP 12K 5% 1/16W
R209	1-216-836-11	s	METAL, CHIP 18K 5% 1/16W
R210	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R211	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R212	1-216-835-11	s	METAL, CHIP 15K 5% 1/16W
R213	1-216-671-11	s	METAL, CHIP 6.8K 0.5% 1/10W
R214	1-216-671-11	s	METAL, CHIP 6.8K 0.5% 1/10W
R215	1-216-673-11	s	METAL, CHIP 8.2K 0.5% 1/10W
R216	1-216-673-11	s	METAL, CHIP 8.2K 0.5% 1/10W
R217	1-216-845-11	s	METAL, CHIP 100K 5% 1/16W
	(Up to Serial No. J:10105, UC:20115, EK:50580)		
R218	1-216-842-11	s	METAL, CHIP 56K 5% 1/16W
R219	1-216-683-11	s	METAL, CHIP 22K 0.5% 1/10W
RV101	1-228-458-00	s	RES, ADJ, METAL 5K
RV102	1-228-458-00	s	RES, ADJ, METAL 5K
RV103	1-228-461-00	s	RES, ADJ, CERMET 50K
RV104	1-228-461-00	s	RES, ADJ, CERMET 50K
RV105	1-228-460-00	s	RES, ADJ, METAL 20K
RV201	1-228-458-00	s	RES, ADJ, METAL 5K
RV202	1-228-458-00	s	RES, ADJ, METAL 5K
RV203	1-228-461-00	s	RES, ADJ, CERMET 50K
RV204	1-228-461-00	s	RES, ADJ, CERMET 50K
RV205	1-228-460-00	s	RES, ADJ, METAL 20K

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

RM-77 BOARD

Ref. No.
or Q'ty Part No. SP Description

1pc A-7850-820-A o COMPLETE PCB, RM-77

(This assembly includes the following parts.)

C5	1-164-004-11 s CERAMIC, CHIP 0.1uF 10% 25V
C6	1-164-004-11 s CERAMIC, CHIP 0.1uF 10% 25V
C7	1-164-004-11 s CERAMIC, CHIP 0.1uF 10% 25V
C8	1-164-004-11 s CERAMIC, CHIP 0.1uF 10% 25V
C9	1-164-004-11 s CERAMIC, CHIP 0.1uF 10% 25V
C10	1-164-004-11 s CERAMIC, CHIP 0.1uF 10% 25V
C11	1-164-004-11 s CERAMIC, CHIP 0.1uF 10% 25V
C12	1-164-004-11 s CERAMIC, CHIP 0.1uF 10% 25V
C13	1-164-004-11 s CERAMIC, CHIP 0.1uF 10% 25V
C14	1-164-004-11 s CERAMIC, CHIP 0.1uF 10% 25V
CN1	1-562-993-11 o SOCKET, CONNECTOR 30P
CN2	1-563-335-11 s CONNECTOR, DIN 48P, FEMALE
CN3	1-506-474-11 s CONNECTOR, 9P, MALE
CN4	1-506-473-11 s CONNECTOR, 8P, MALE
CN5	1-506-479-11 s PIN, CONNECTOR 14P
CN6	1-506-473-11 s CONNECTOR, 8P, MALE
CN7	1-506-470-11 s CONNECTOR, 5P, MALE
CN8	1-564-705-11 o PIN HEADER, STRAIGHT 3P
D1	8-719-911-19 s DIODE 1SS119
D2	8-719-911-19 s DIODE 1SS119
IC1	8-759-926-77 s IC SN74HC541ANS
IC2	8-759-926-77 s IC SN74HC541ANS
IC3	8-759-926-49 s IC SN74HC245ANS
IC4	8-759-926-77 s IC SN74HC541ANS
IC5	8-759-716-71 s IC 16V8-RM77V1.0
IC6	8-759-151-38 s IC CXD8141Q
IC7	8-759-151-38 s IC CXD8141Q
IC8	8-759-207-07 s IC TD62381P
IC9	8-759-207-07 s IC TD62381P
L1	1-419-533-11 s COIL 47uH
RB1	1-231-410-00 s RESISTOR BLOCK 10Kx8
RB2	1-231-410-00 s RESISTOR BLOCK 10Kx8
RB3	1-231-410-00 s RESISTOR BLOCK 10Kx8
RB4	1-231-410-00 s RESISTOR BLOCK 10Kx8
RB5	1-231-410-00 s RESISTOR BLOCK 10Kx8
RB6	1-231-410-00 s RESISTOR BLOCK 10Kx8
RB7	1-231-410-00 s RESISTOR BLOCK 10Kx8
RB8	1-231-410-00 s RESISTOR BLOCK 10Kx8
SW1	1-553-977-00 s SWITCH, SLIDE

SP-13 BOARD (Up to Serial No. J: 15240, UC: 25180, EK: 55040)

Ref. No.
or Q'ty Part No. SP Description

1pc A-7850-805-A o COMPLETE PCB, SP-13

(This assembly includes the following parts.)

1pc	1-639-523-11 o PC BOARD, DUS-316 (KO-16 BOARD) (Up to Serial No. J:10105, UC:20115, EK:50580)
1pc	1-640-801-11 o PC BOARD, DUS-447
2pcs	2-355-254-01 s SPACER (A), LCD
3pcs	3-167-943-01 o CASE (UPPER), SHIELD, SP
3pcs	3-167-944-01 o CASE (LOWER), SHIELD, SP
3pcs	3-167-945-01 o CASE (INNER), SHIELD, SP
3pcs	7-682-903-11 s SCREW +PNH 3x6
C6	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C8	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C10	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C11	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C17	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C19	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C20	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C22	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C25	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C26	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C28	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C29	1-163-251-11 s CERAMIC 100PF 5% 50VW
C33,35,38,44,49	1-124-229-00 s ELECT 33 20% 10V (Up to Serial No. J:10105, UC:20115, EK:50380)
	1-124-442-00 s ELECT 330 20% 6.3V (Serial No. J:10106 and higher, UC:20116 and higher, EK:50381 and higher)
C36	1-136-165-00 s FILM 0.1uF 5% 50V
C37	1-136-165-00 s FILM 0.1uF 5% 50V
C41	1-164-182-11 s CERAMIC 0.0033uF 10% 50VW
C47	1-136-163-00 s FILM 0.068uF 5% 50VW
C48	1-136-163-00 s FILM 0.068uF 5% 50VW
C53	1-130-471-00 s MYLAR 0.001uF 5% 50V
C57	1-102-973-00 s CERAMIC 100PF 5% 50V
C63	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C64	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C65	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C67	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C68	1-107-204-00 s MICA 12PF 5% 500V
C69	1-107-157-00 s MICA 27PF 5% 500V (Up to Serial No. J:15040, UC:25020, EK:55040)
C70	1-107-204-00 s MICA 12PF 5% 500V
C71	1-107-207-00 s MICA 16PF 5% 500V
C72	1-107-157-00 s MICA 27PF 5% 500V (Up to Serial No. J:15040, UC:25020, EK:55040)
C73	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C74	1-107-207-00 s MICA 16PF 5% 500V
C75	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C77	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C78	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C81	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C82	1-164-232-11 s CERAMIC 0.01uF 10% 50VOW

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

(SP-13 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
C84	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C86	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C88	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C90	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C96	1-102-973-00	s CERAMIC 100PF 5% 50V
C97	1-130-471-00	s MYLAR 0.001uF 5% 50V
C99	1-130-481-00	s MYLAR 0.0068uF 5% 50V
C102	1-136-155-00	s FILM 0.015uF 5% 50V
C106	1-130-471-00	s MYLAR 0.001uF 5% 50V
C107	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C113	1-102-973-00	s CERAMIC 100PF 5% 50V
C114	1-130-471-00	s MYLAR 0.001uF 5% 50V
C116	1-130-481-00	s MYLAR 0.0068uF 5% 50V
C119	1-136-155-00	s FILM 0.015uF 5% 50V
C123	1-130-471-00	s MYLAR 0.001uF 5% 50V
C124	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C125	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C126	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C128	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C129	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C130	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C131	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C133	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C134	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C135	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C136	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C137	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C138	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C139	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C140	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C141	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C142	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C143	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C145	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C147	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C200	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
C300	1-126-153-11	s ELECT 22 20% 6.3V (Serial No. J:10106 and higher, UC:20116 and higher, EK:50381 and higher)
C400,401	1-124-604-00	s ELECT 330 20% 10V (Serial No. J:10106 and higher, UC:20116 and higher, EK:50381 and higher)
C500	1-164-232-11	s CERAMIC 0.01uF 10% 50VOW
CN1	1-506-475-11	o CONNECTOR, 10P, MALE
CN2	1-564-069-41	o PIN, CONNECTOR 14P
CN3	1-506-478-11	s CONNECTOR, 13P, MALE
CN4	1-506-468-11	s CONNECTOR, 3P, MALE
CN5	1-564-708-11	o PIN HEADER, STRAIGHT 6P
CN6	1-506-477-11	s CONNECTOR, 12P, MALE
CN7	1-506-472-11	s CONNECTOR, 7P, MALE
CN8	1-562-708-11	o CONNECTOR, FPC 13P, FEMALE
CN9	1-562-883-11	o CONNECTOR, FPC 20P, FEMALE
CN10	1-562-883-11	o CONNECTOR, FPC 20P, FEMALE
CN11	1-506-478-11	s CONNECTOR, 13P, MALE
CN12	1-506-478-11	s CONNECTOR, 13P, MALE

(SP-13 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
CT1,2	1-141-227-00	s CERAMIC TRIMMER (Serial No. J:15041 and Higher, UC:25021 and Higher, EK:55041 and Higher)
D1	8-719-800-26	s DIODE TLUG164
D2	8-719-800-26	s DIODE TLUG164
D3	8-719-800-56	s DIODE TLUR164
D4	8-719-938-68	s DIODE GL3HY8
D5	8-719-907-19	s DIODE, VARICAP FC52M-5
D6	8-719-915-30	s DIODE, VARICAP FC53M
D7	8-719-915-30	s DIODE, VARICAP FC53M
D8	8-719-911-19	s DIODE 1SS119
D9	8-719-911-19	s DIODE 1SS119
D10	8-719-915-30	s DIODE, VARICAP FC53M
D11	8-719-911-19	s DIODE 1SS119
D12	8-719-911-19	s DIODE 1SS119
FB1	1-543-256-11	s BEAD, FERRITE
FB2	1-543-256-11	s BEAD, FERRITE
FB3	1-543-256-11	s BEAD, FERRITE
FB4	1-543-256-11	s BEAD, FERRITE
FB5	1-543-256-11	s BEAD, FERRITE
FB6	1-543-256-11	s BEAD, FERRITE
FB7	1-543-256-11	s BEAD, FERRITE
FB8	1-543-256-11	s BEAD, FERRITE
FB9	1-543-256-11	s BEAD, FERRITE
FB10	1-543-256-11	s BEAD, FERRITE
FB11	1-543-256-11	s BEAD, FERRITE
FB12	1-543-256-11	s BEAD, FERRITE
FB13	1-543-256-11	s BEAD, FERRITE
FB14	1-543-256-11	s BEAD, FERRITE
FB15	1-543-256-11	s BEAD, FERRITE
FB16	1-543-256-11	s BEAD, FERRITE
FB17	1-543-256-11	s BEAD, FERRITE
FB18	1-543-256-11	s BEAD, FERRITE
FB19	1-543-256-11	s BEAD, FERRITE
FB20	1-543-256-11	s BEAD, FERRITE
FB21	1-543-256-11	s BEAD, FERRITE
FB22	1-543-256-11	s BEAD, FERRITE
FB23	1-543-256-11	s BEAD, FERRITE
FB24	1-543-256-11	s BEAD, FERRITE
FB25	1-543-256-11	s BEAD, FERRITE
FB26	1-543-256-11	s BEAD, FERRITE
FB27	1-543-256-11	s BEAD, FERRITE
FB28	1-543-256-11	s BEAD, FERRITE
FB29	1-543-256-11	s BEAD, FERRITE
FB30	1-543-256-11	s BEAD, FERRITE
FB31	1-543-256-11	s BEAD, FERRITE
FB32	1-543-256-11	s BEAD, FERRITE
FB600, 601	1-535-178-00	s BEAD, FERRITE (Up to Serial No. J:10105, UC:20115, EK:50380)
ICB2	8-759-926-77	s IC SN74HC541ANS
ICB4	8-759-926-77	s IC SN74HC541ANS
ICB8	8-759-926-76	s IC SN74HC540ANS
ICB9	8-759-926-05	s IC SN74HC125ANS
ICC3	8-759-152-36	s IC CXD8185AQ
ICC5	8-759-926-05	s IC SN74HC125ANS
ICC6	8-759-926-77	s IC SN74HC541ANS
ICC9	8-759-933-84	s IC CXD1008Q

NOTE : Please see pages E-27 for the parts that
are not listed in the parts list.

(SP-13 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
ICD3	8-759-152-05 s	IC CXD8184AQ
ICD5	8-759-008-52 s	IC MC74HC123AF
ICD7	8-752-337-79 s	IC CXX58257AM-10LL
ICD9	8-759-933-85 s	IC CXD1009Q
ICE10	8-759-239-23 s	IC TC74HC86AF (Serial No. J:10106 and Higher, UC:20116 and Higher, EK:50581 and Higher)
ICF1	8-759-926-77 s	IC SN74HC541ANS
ICF2	8-759-926-05 s	IC SN74HC125ANS
ICF3	8-759-927-29 s	IC SN74HC004ANS
ICF4	8-759-926-77 s	IC SN74HC541ANS
ICF5	8-759-239-23 s	IC TC74HC86AF
ICF6	8-759-044-72 s	IC CXD8319M
ICF9	8-759-970-59 s	IC TLC272CPS
ICG3	8-759-030-59 s	IC MC1648P-1
ICG7	8-759-239-23 s	IC TC74HC86AF (Up to Serial No. J:10105, UC:20115, EK:50580)
ICG9	8-759-970-59 s	IC TLC272CPS
ICG10	8-759-926-77 s	IC SN74HC541ANS
ICH2	8-759-040-44 s	IC MC4044P
ICH9	8-759-933-84 s	IC CXD1008Q
ICH10	8-759-926-05 s	IC SN74HC125ANS
ICH6A	8-759-230-98 s	IC TC74HC4052AF
ICH6B	8-759-230-98 s	IC TC74HC4052AF
ICJ2	8-759-927-29 s	IC SN74HC004ANS
ICJ3	8-752-306-51 s	IC CX23065
ICJ5	8-759-231-93 s	IC TC74HC4051AF
ICJ6	8-759-231-93 s	IC TC74HC4051AF
ICJ7	8-752-337-79 s	IC CXX58257AM-10LL
ICJ9	8-759-933-85 s	IC CXD1009Q
ICK2	8-759-970-59 s	IC TLC272CPS
ICK5	8-759-983-69 s	IC LM358PS
ICL2	8-759-925-74 s	IC SN74HC04ANS
ICL3	8-759-925-85 s	IC SN74HC32ANS
ICL5	8-759-926-77 s	IC SN74HC541ANS
ICL6	8-759-926-77 s	IC SN74HC541ANS
ICL9	8-759-970-59 s	IC TLC272CPS
ICM2	8-759-927-46 s	IC SN74HC00ANS
ICM8	8-759-511-14 s	IC TLC274CNS
ICM9A	8-759-970-59 s	IC TLC272CPS
ICM9B	8-759-511-14 s	IC TLC274CNS
ICM3A	8-759-927-46 s	IC SN74HC00ANS
ICM3B	8-759-927-46 s	IC SN74HC00ANS
J1	1-564-947-11 s	CONNECTOR, 2P, MALE
J2	1-564-947-11 s	CONNECTOR, 2P, MALE
L1	1-412-533-11 s	COIL 47uH
L2	1-412-533-11 s	COIL 47uH
L3 to 5	1-459-155-00 s	COIL 45uH (Up to Serial No. J:10105, UC:20115, EK:50380)

(SP-13 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
		1-410-482-31 s COIL 100uH (Serial No. J:10106 and higher, UC:20116 and higher, EK:50381 and higher)
L6,8	1-408-429-00 s	COIL 470uH (Serial No. J:10106 and higher, UC:20116 and higher, EK:50381 and higher)
L7	1-426-259-11 s	COIL, RF
L9 to 16	1-459-155-00 s	COIL 45uH (Up to Serial No. J:10105, UC:20116, EK:50380)
		1-410-482-31 s COIL 100uH (Serial No. J:10106 and higher, UC:20116 and higher, EK:50381 and higher)
LV1	1-406-406-11 s	COIL (OSC)
LV2	1-406-406-11 s	COIL (OSC)
LV3	1-406-406-11 s	COIL (OSC)
Q1	8-729-385-52 s	TRANSISTOR 2SC2855-E
R51	1-216-056-00 s	METAL 2K 5% 1/10W
R53	1-216-067-00 s	METAL, CHIP 5.6K 5% 1/10W
R506	1-216-079-00 s	METAL, CHIP 18K 5% 1/10W
R514	1-216-079-00 s	METAL, CHIP 18K 5% 1/10W
R608	1-249-408-11 s	CARBON 180 5% 1/4W (Up to Serial No. J:10095, UC:20045, EK:50200)
R700	1-249-397-11 s	CARBON 22 5% 1/4W (Up to Serial No. J:10095, UC:20045, EK:50200)
R701	1-249-403-11 s	CARBON 68 5% 1/4W (Up to Serial No. J:10095, UC:20045, EK:50200)
R702	1-249-403-11 s	CARBON 68 5% 1/4W (Up to Serial No. J:10105, UC:20115, EK:50380)
		1-216-033-00 s CHIP 220 5% 1/10W (Serial No. J:10106 and higher, UC:20116 and higher, EK:50381 and higher)
R800	1-249-417-11 s	CARBON 1K 5% 1/4W (Serial No. J:10036 to 10105, UC:20026 to 20115, EK:50061 to 50580)
R801	1-249-417-11 s	CARBON 1K 5% 1/4W (Serial No. J:10036 to 10105, UC:20026 to 20115, EK:50061 to 50580)
R514	1-216-079-00 s	METAL, CHIP 18K 5% 1/10W
RB1	1-231-533-00 s	RESISTOR BLOCK 10Kx4
RB2	1-231-533-00 s	RESISTOR BLOCK 10Kx4
RB3	1-231-410-00 s	RESISTOR BLOCK 10Kx8
RB4	1-231-410-00 s	RESISTOR BLOCK 10Kx8
RB6	1-231-410-00 s	RESISTOR BLOCK 10Kx8
RB7	1-231-533-00 s	RESISTOR BLOCK 10Kx4
RB8	1-231-410-00 s	RESISTOR BLOCK 10Kx8
RB9	1-231-533-00 s	RESISTOR BLOCK 10Kx4

NOTE : Please see pages E-27 for the parts that
are not listed in the parts list

(SP-13 BOARD)

Ref. No.

or Q'ty Part No. SP Description

RV1	1-237-518-21	s RES, ADJ, METAL 10K
RV2	1-237-516-21	s RES, ADJ, METAL 2K
RV3	1-237-520-21	s RES, ADJ, METAL 50K
RV4	1-237-516-21	s RES, ADJ, METAL 2K
RV5	1-237-520-21	s RES, ADJ, METAL 50K
RV6	1-237-516-21	s RES, ADJ, METAL 2K
X1	1-567-698-11	s OSCILLATOR, CRYSTAL
X2	1-579-219-11	s OSCILLATOR, CRYSTAL

SP-13 BOARD (Serial No. J: 15241 and higher,

UC: 25181 and higher, EK: 55041 and higher)

Ref. No.

or Q'ty Part No. SP Description

1pc	A-7850-805-A	o COMPLETE PCB, SP-13 (This assembly includes the following parts.)
3pcs	3-167-945-02	o CASE (INNER), SHIELD, SP
3pcs	3-167-944-02	o CASE (LOWER), SHIELD, SP
3pcs	4-925-756-21	o HOLDER, LED
2pcs	2-355-254-01	s SPACER (A), LCD
3pcs	3-167-943-01	o CASE (UPPER), SHIELD, SP
1pc	4-925-756-21	o HOLDER, LED
C1	1-124-442-00	s ELECT 330uF 20% 6.3V
C2	1-124-442-00	s ELECT 330uF 20% 6.3V
C3	1-124-442-00	s ELECT 330uF 20% 6.3V
C4	1-124-442-00	s ELECT 330uF 20% 6.3V
C6	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C7	1-124-442-00	s ELECT 330uF 20% 6.3V
C8	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C9	1-124-442-00	s ELECT 330uF 20% 6.3V
C10	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C11	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C12	1-124-442-00	s ELECT 330uF 20% 6.3V
C17	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C18	1-124-442-00	s ELECT 330uF 20% 6.3V
C19	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C20	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C21	1-124-442-00	s ELECT 330uF 20% 6.3V
C22	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C23	1-124-442-00	s ELECT 330uF 20% 6.3V
C24	1-124-442-00	s ELECT 330uF 20% 6.3V
C25	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C26	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C27	1-124-442-00	s ELECT 330uF 20% 6.3V
C28	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C29	1-163-251-11	s CERAMIC, CHIP 100PF 5% 50V
C33	1-124-442-00	s ELECT 330uF 20% 6.3V
C35	1-124-442-00	s ELECT 330uF 20% 6.3V
C36	1-136-165-00	s FILM 0.1uF 5% 50V
C37	1-136-165-00	s FILM 0.1uF 5% 50V
C38	1-124-442-00	s ELECT 330uF 20% 6.3V
C39	1-124-442-00	s ELECT 330uF 20% 6.3V
C41	1-164-182-11	s CERAMIC CHIP 3300PF 10% 100V
C44	1-124-442-00	s ELECT 330uF 20% 6.3V
C47	1-136-163-00	s MYLAR 0.068uF 10% 50V
C48	1-136-163-00	s MYLAR 0.068uF 10% 50V
C49	1-124-442-00	s ELECT 330uF 20% 6.3V
C53	1-130-471-00	s MYLAR 0.001uF 5% 50V
C57	1-102-973-00	s CERAMIC 100PF 5% 50V
C58	1-124-442-00	s ELECT 330uF 20% 6.3V
C63	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C64	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C65	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C66	1-124-442-00	s ELECT 330uF 20% 6.3V
C67	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C68	1-107-204-00	s MICA 12PF 5% 500V
C70	1-107-204-00	s MICA 12PF 5% 500V
C71	1-107-207-00	s MICA 16PF 5% 500V
C73	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C74	1-107-207-00	s MICA 16PF 5% 500V
C75	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C76	1-124-442-00	s ELECT 330uF 20% 6.3V

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

(SP-13 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
C77	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C78	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C79	1-124-442-00	s ELECT 330uF 20% 6.3V
C80	1-124-442-00	s ELECT 330uF 20% 6.3V
C81	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C82	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C83	1-124-442-00	s ELECT 330uF 20% 6.3V
C84	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C85	1-124-442-00	s ELECT 330uF 20% 6.3V
C86	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C87	1-124-442-00	s ELECT 330uF 20% 6.3V
C88	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C89	1-124-442-00	s ELECT 330uF 20% 6.3V
C90	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C91	1-124-442-00	s ELECT 330uF 20% 6.3V
C92	1-124-442-00	s ELECT 330uF 20% 6.3V
C93	1-124-442-00	s ELECT 330uF 20% 6.3V
C94	1-124-442-00	s ELECT 330uF 20% 6.3V
C96	1-102-973-00	s CERAMIC 100PF 5% 50V
C97	1-130-471-00	s MYLAR 0.001uF 5% 50V
C98	1-124-442-00	s ELECT 330uF 20% 6.3V
C99	1-130-481-00	s MYLAR 0.0068uF 5% 50V
C102	1-136-155-00	s FILM 0.015uF 5% 50V
C106	1-130-471-00	s MYLAR 0.001uF 5% 50V
C107	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C108	1-124-442-00	s ELECT 330uF 20% 6.3V
C109	1-124-442-00	s ELECT 330uF 20% 6.3V
C110	1-124-442-00	s ELECT 330uF 20% 6.3V
C111	1-124-442-00	s ELECT 330uF 20% 6.3V
C113	1-102-973-00	s CERAMIC 100PF 5% 50V
C114	1-130-471-00	s MYLAR 0.001uF 5% 50V
C115	1-124-442-00	s ELECT 330uF 20% 6.3V
C116	1-130-481-00	s MYLAR 0.0068uF 5% 50V
C119	1-136-155-00	s FILM 0.015uF 5% 50V
C123	1-130-471-00	s MYLAR 0.001uF 5% 50V
C124	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C125	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C126	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C128	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C129	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C130	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C131	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C133	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C134	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C135	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C136	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C137	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C138	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C139	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C140	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C141	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C142	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C143	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C144	1-124-442-00	s ELECT 330uF 20% 6.3V
C145	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C146	1-124-442-00	s ELECT 330uF 20% 6.3V
C147	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C148	1-124-442-00	s ELECT 330uF 20% 6.3V
C200	1-164-232-11	s CERAMIC 0.01uF 10% 100V

(SP-13 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
C300	1-126-153-11	s ELECT 22uF 20% 6.3V
C500	1-164-232-11	s CERAMIC 0.01uF 10% 100V
C505	1-164-232-11	s CERAMIC 0.01uF 10% 100V
CN1	1-506-475-11	o CONNECTOR, 10P, MALE
CN2	1-564-069-41	o PIN, CONNECTOR 14P
CN3	1-506-478-11	s CONNECTOR, 13P, MALE
CN4	1-506-468-11	s CONNECTOR, 3P, MALE
CN5	1-564-708-11	o PIN HEADER, STRAIGHT 6P
CN6	1-506-477-11	s CONNECTOR, 12P, MALE
CN7	1-506-472-11	s CONNECTOR, 7P, MALE
CN8	1-562-708-11	o CONNECTOR, FPC 13P, FEMALE
CN9	1-562-883-11	o CONNECTOR, FPC 20P, FEMALE
CN10	1-562-883-11	o CONNECTOR, FPC 20P, FEMALE
CN11	1-506-478-11	s CONNECTOR, 13P, MALE
CN12	1-506-478-11	s CONNECTOR, 13P, MALE
CT1	1-141-227-00	s CAP, TRIMMER 20PF
CT2	1-141-227-00	s CAP, TRIMMER 20PF
D1	8-719-800-26	s DIODE TLUG164
D2	8-719-800-26	s DIODE TLUG164
D3	8-719-800-56	s LED TLUR164, RED
D4	8-719-938-68	s DIODE GL3HY8
D5	8-719-907-19	s DIODE, VARICAP FC52M-5
D6	8-719-915-30	s DIODE, VARICAP FC53M
D7	8-719-915-30	s DIODE, VARICAP FC53M
D8	8-719-911-19	s DIODE 1SS119
D9	8-719-911-19	s DIODE 1SS119
D10	8-719-915-30	s DIODE, VARICAP FC53M
D11	8-719-911-19	s DIODE 1SS119
D12	8-719-911-19	s DIODE 1SS119
D101	8-719-911-19	s DIODE 1SS119
D102	8-719-911-19	s DIODE 1SS119
FB1	1-543-256-11	s BEAD, FERRITE
FB2	1-543-256-11	s BEAD, FERRITE
FB3	1-543-256-11	s BEAD, FERRITE
FB4	1-543-256-11	s BEAD, FERRITE
FB5	1-543-256-11	s BEAD, FERRITE
FB6	1-543-256-11	s BEAD, FERRITE
FB7	1-543-256-11	s BEAD, FERRITE
FB8	1-543-256-11	s BEAD, FERRITE
FB9	1-543-256-11	s BEAD, FERRITE
FB10	1-543-256-11	s BEAD, FERRITE
FB11	1-543-256-11	s BEAD, FERRITE
FB12	1-543-256-11	s BEAD, FERRITE
FB13	1-543-256-11	s BEAD, FERRITE
FB14	1-543-256-11	s BEAD, FERRITE
FB15	1-543-256-11	s BEAD, FERRITE
FB16	1-543-256-11	s BEAD, FERRITE
FB17	1-543-256-11	s BEAD, FERRITE
FB18	1-543-256-11	s BEAD, FERRITE
FB19	1-543-256-11	s BEAD, FERRITE
FB20	1-543-256-11	s BEAD, FERRITE
FB21	1-543-256-11	s BEAD, FERRITE
FB22	1-543-256-11	s BEAD, FERRITE
FB23	1-543-256-11	s BEAD, FERRITE
FB24	1-543-256-11	s BEAD, FERRITE
FB25	1-543-256-11	s BEAD, FERRITE
FB26	1-543-256-11	s BEAD, FERRITE

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

PCM-7030 (JUC,EK)

(SP-13 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
FB27	1-543-256-11	s BEAD, FERRITE
FB28	1-543-256-11	s BEAD, FERRITE
FB29	1-543-256-11	s BEAD, FERRITE
FB30	1-543-256-11	s BEAD, FERRITE
FB31	1-543-256-11	s BEAD, FERRITE
FB32	1-543-256-11	s BEAD, FERRITE
ICB2	8-759-926-77	s IC SN74HC541NS
ICB4	8-759-926-77	s IC SN74HC541NS
ICB8	8-759-926-76	s IC SN74HC540ANS
ICB9	8-759-926-05	s IC SN74HC125ANS
ICC3	8-759-152-36	s IC CXD8185AQ
ICC5	8-759-926-05	s IC SN74HC125ANS
ICC6	8-759-926-77	s IC SN74HC541NS
ICC9	8-759-933-84	s IC CXD1008Q
ICD3	8-759-152-05	s IC CXD8184AQ
ICD5	8-759-239-55	s IC MC74HC123AF
ICD7	8-759-507-85	s IC MS62256CLL-10FC
ICD9	8-759-933-85	s IC CXD1009Q
ICF1	8-759-926-77	s IC SN74HC541NS
ICF2	8-759-926-05	s IC SN74HC125ANS
ICF3	8-759-927-29	s IC SN74HC004NS
ICF4	8-759-926-77	s IC SN74HC541NS
ICF5	8-759-239-23	s IC TC74HC86AF
ICF9	8-759-970-59	s IC TLC272CPS
ICG3	8-759-030-59	s IC MC1648P-1
ICG9	8-759-970-59	s IC TLC272CPS
ICG10	8-759-926-77	s IC SN74HC541NS
ICH2	8-759-040-44	s IC MC4044P
ICH9	8-759-933-84	s IC CXD1008Q
ICH10	8-759-926-05	s IC SN74HC125ANS
ICH6A	8-759-230-98	s IC TC74HC4052AF
ICH6B	8-759-230-98	s IC TC74HC4052AF
ICJ2	8-759-927-29	s IC SN74HC004NS
ICJ3	8-752-306-51	s IC CX23065A
ICJ5	8-759-231-93	s IC TC74HC4051AF
ICJ6	8-759-231-93	s IC TC74HC4051AF
ICJ7	8-759-507-85	s IC MS62256CLL-10FC
ICJ9	8-759-933-85	s IC CXD1009Q
ICK2	8-759-970-59	s IC TLC272CPS
ICK5	8-759-983-69	s IC LM358PS
ICK10	8-759-044-72	s IC CXD8319M
ICL2	8-759-925-74	s IC TC74HC04NS
ICL3	8-759-925-85	s IC SN74HC32NS
ICL5	8-759-926-77	s IC SN74HC541NS
ICL6	8-759-926-77	s IC SN74HC541NS
ICL9	8-759-970-59	s IC TLC272CPS
ICM2	8-759-927-46	s IC SN74HC00NS
ICM8	8-759-511-14	s IC TLC274CNS
ICM3A	8-759-927-46	s IC SN74HC00NS
ICM3B	8-759-927-46	s IC SN74HC00NS
ICM9A	8-759-970-59	s IC TLC272CPS
ICM9B	8-759-511-14	s IC TLC274CNS
J1	1-564-947-11	s CONNECTOR, 2P, MALE
J2	1-564-947-11	s CONNECTOR, 2P, MALE

(SP-13 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
L1	1-412-533-11	s INDUCTOR 47UH
L2	1-412-533-11	s INDUCTOR 47UH
L3	1-410-482-31	s INDUCTOR 100uH
L4	1-410-482-31	s INDUCTOR 100uH
L5	1-410-482-31	s INDUCTOR 100uH
L6	1-408-429-00	s INDUCTOR 470uH
L7	1-426-259-11	s COIL, RF
L8	1-408-429-00	s INDUCTOR 470uH
L9	1-410-482-31	s INDUCTOR 100uH
L10	1-410-482-31	s INDUCTOR 100uH
L11	1-410-482-31	s INDUCTOR 100uH
L12	1-410-482-31	s INDUCTOR 100uH
L13	1-410-482-31	s INDUCTOR 100uH
L14	1-410-482-31	s INDUCTOR 100uH
L15	1-410-482-31	s INDUCTOR 100uH
L16	1-410-482-31	s INDUCTOR 100uH
LV1	1-406-406-11	s COIL (OSC)
LV2	1-406-406-11	s COIL (OSC)
LV3	1-406-406-11	s COIL (OSC)
Q1	8-729-385-52	s TRANSISTOR 2SC2855-E
Q2	8-729-900-74	s TRANSISTOR DTC143TS (Serial No. J:15301 and higer, UC:25471 and higer, EK:55501 and higer)
R51	1-216-056-00	s METAL, CHIP 2K 5% 1/10W
R53	1-216-067-00	s METAL, CHIP 5.6K 5% 1/10W
R505	1-216-047-00	s METAL, CHIP 820 5% 1/10W
R506	1-216-079-00	s METAL, CHIP 18K 5% 1/10W
RB1	1-231-533-00	s RESISTOR BLOCK 10Kx4
RB2	1-231-533-00	s RESISTOR BLOCK 10Kx4
RB3	1-231-410-00	s RESISTOR BLOCK 10Kx8
RB4	1-231-410-00	s RESISTOR BLOCK 10Kx8
RB6	1-231-410-00	s RESISTOR BLOCK 10Kx8
RB7	1-231-533-00	s RESISTOR BLOCK 10Kx4
RB8	1-231-410-00	s RESISTOR BLOCK 10Kx8
RB9	1-231-533-00	s RESISTOR BLOCK 10Kx4
RV1	1-237-518-21	s RES, ADJ, METAL 10K
RV2	1-237-516-21	s RES, ADJ, METAL 2K
RV3	1-237-520-21	s RES, ADJ, METAL 50K
RV4	1-237-516-21	s RES, ADJ, METAL 2K
RV5	1-237-520-21	s RES, ADJ, METAL 50K
RV6	1-237-516-21	s RES, ADJ, METAL 2K
X1	1-567-698-11	s OSCILLATOR, CRYSTAL
X2	1-579-219-11	s OSCILLATOR, CRYSTAL

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

SP-17B BOARD

Ref. No.
or Q'ty Part No. SP Description

1pc A-7850-890-A o COMPLETE PCB, SP-17B
(This assembly includes the following parts.)

2pcs 7-621-284-30 s SCREW +P 2.6X8
2pcs 7-622-207-05 s N 2.6, TYPE 2
C3 1-126-177-11 s ELECT 100uF 20% 10V
CN1 1-506-750-11 o CONNECTOR, DIN 48P, MALE
D1 8-719-938-68 s DIODE GL3HY8
D2 8-719-800-26 s DIODE TLUG164
D3 8-719-800-26 s DIODE TLUG164
D4 8-719-800-56 s LED TLUR164, RED
IC1 8-759-152-60 s IC CXD8163AQ
IC10 8-752-331-87 s IC CXD1160AP
IC11 8-752-331-87 s IC CXD1160AP
L1 1-412-533-11 s COIL 47uH

SP-17C BOARD

Ref. No.
or Q'ty Part No. SP Description

1pc A-7850-892-A o COMPLETE PCB, SP-17C
(This assembly includes the following parts.)

2pcs 7-621-284-30 s SCREW +P 2.6X8
2pcs 7-622-207-05 s N 2.6, TYPE 2
C3 1-126-177-11 s ELECT 100uF 20% 10V
CN1 1-506-750-11 o CONNECTOR, DIN 48P, MALE
D1 8-719-938-68 s DIODE GL3HY8
D2 8-719-800-26 s DIODE TLUG164
D3 8-719-800-26 s DIODE TLUG164
D4 8-719-800-56 s LED TLUR164, RED
IC1 8-759-152-60 s IC CXD8163AQ
IC10 8-752-331-87 s IC CXD1160AP
L1 1-412-533-11 s COIL 47uH

SV-123 BOARD

Ref. No.
or Q'ty Part No. SP Description

1pc A-7850-813-A o COMPLETE PCB, SV-123
(This assembly includes the following parts.)

2pcs 7-682-903-11 s SCREW +PWH 3X6
C101 1-162-201-31 s CERAMIC 12PF 5% 50V
C102 1-162-201-31 s CERAMIC 12PF 5% 50V
C103 1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C105 1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C106 1-126-157-11 s ELECT 10uF 20% 16V
C107 1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C109 1-136-160-00 s FILM 0.039uF 5% 50VOW
C110 1-136-169-00 s MYLAR 0.22uF 5% 50V
C111 1-136-172-00 s FILM 0.39uF 5% 50VOW
C112 1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C113 1-136-153-00 s FILM 0.01uF 5% 50V
C114 1-126-157-11 s ELECT 10uF 20% 16V
C115 1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C116 1-126-157-11 s ELECT 10uF 20% 16V
C117 1-136-153-00 s FILM 0.01uF 5% 50V
C118 1-136-158-00 s FILM 0.027uF 5% 50VOW
C119 1-130-473-00 s MYLAR 0.0015uF 5% 50V
C120 1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C122 1-126-157-11 s ELECT 10uF 20% 16V
C124 1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C125 1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C127 1-163-017-00 s CERAMIC, CHIP 0.0047uF 5% 50V
C128 1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C133 1-136-153-00 s FILM 0.01uF 5% 50V
C134 1-136-153-00 s FILM 0.01uF 5% 50V
C136 1-126-157-11 s ELECT 10uF 20% 16V
C138 1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C141 1-136-153-00 s FILM 0.01uF 5% 50V
C142 1-136-153-00 s FILM 0.01uF 5% 50V
C143 1-136-153-00 s FILM 0.01uF 5% 50V
C144 1-136-158-00 s FILM 0.027uF 5% 50VOW
C145 1-130-473-00 s MYLAR 0.0015uF 5% 50V
C146 1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C147 1-136-153-00 s FILM 0.01uF 5% 50V
C148 1-136-158-00 s FILM 0.027uF 5% 50VOW
C149 1-130-473-00 s MYLAR 0.0015uF 5% 50V
C150 1-136-153-00 s FILM 0.01uF 5% 50V
C151 1-136-154-00 s FILM 0.012uF 5% 50VOW
C152 1-136-159-00 s FILM 0.033uF 5% 50V
C153 1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C154 1-136-153-00 s FILM 0.01uF 5% 50V
C155 1-136-154-00 s FILM 0.012uF 5% 50VOW
C156 1-136-159-00 s FILM 0.033uF 5% 50V
C158 1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C159 1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C160 1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C161 1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C162 1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C163 1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C164 1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C165 1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C166 1-164-232-11 s CERAMIC 0.01uF 10% 50VOW
C167 1-164-232-11 s CERAMIC 0.01uF 10% 50VOW

NOTE : Please see pages E-27 for the parts that
are not listed in the parts list.

PCM-7030 (J,UC,EK)

(SV-123 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
C168	1-164-232-11 s	CERAMIC 0.01uF 10% 50VOW
C169	1-164-232-11 s	CERAMIC 0.01uF 10% 50VOW
CN101	1-565-189-11 s	CONNECTOR, FPC 36P
CN102	1-506-477-11 s	CONNECTOR, 12P, MALE
CN103	1-506-473-11 s	CONNECTOR, 8P, MALE
CN104	1-506-472-11 s	CONNECTOR, 7P, MALE
CN105	1-562-883-11 o	CONNECTOR, FPC 20P, FEMALE
CN106	1-564-706-11 o	PIN HEADER, STRAIGHT 4P
D101	8-719-400-18 s	DIODE MA152WK
D102	8-719-812-43 s	LED TLG124A, GRN
D103	8-719-812-43 s	LED TLG124A, GRN
D104	8-719-812-43 s	LED TLG124A, GRN
D105	8-719-812-43 s	LED TLG124A, GRN
D106	8-719-812-41 s	LED TLR124, RED
D107	8-719-812-43 s	LED TLG124A, GRN
FB1	1-543-256-11 s	BEAD, FERRITE
FB2	1-543-256-11 s	BEAD, FERRITE
FB3	1-543-256-11 s	BEAD, FERRITE
IC101	8-752-835-62 s	IC CXP80524-053Q
IC102	8-759-946-81 s	IC CXD1052Q-Z
IC103	8-759-983-69 s	IC LM358PS
IC104	8-759-929-26 s	IC TL431CPS
IC105	8-759-983-69 s	IC LM358PS
IC106	8-759-983-69 s	IC LM358PS
IC107	8-752-030-63 s	IC CXA1046M
IC108	8-752-030-63 s	IC CXA1046M
IC109	8-759-983-69 s	IC LM358PS
IC110	8-759-983-69 s	IC LM358PS
IC111	8-759-925-80 s	IC SN74HC14ANS
IC112	8-759-925-76 s	IC SN74HC08ANS
IC113	8-759-239-23 s	IC TC74HC86AF
IC114	8-759-008-67 s	IC MC14066BF
IC115	8-759-925-90 s	IC SN74HC74ANS
IC116	8-759-926-77 s	IC SN74HC541ANS
IC117	8-759-927-46 s	IC SN74HC00ANS
L101	1-408-425-00 s	INDUCTOR 220uH
L102	1-408-425-00 s	INDUCTOR 220uH
L103	1-412-533-11 s	COIL 47uH
L104	1-412-533-11 s	COIL 47uH
Q101	8-729-216-22 s	TRANSISTOR 2SA1162-G
Q102	8-729-230-49 s	TRANSISTOR 2SC2712-YG
Q103	8-729-216-22 s	TRANSISTOR 2SA1162-G
Q104	8-729-230-49 s	TRANSISTOR 2SC2712-YG
Q105	8-729-216-22 s	TRANSISTOR 2SA1162-G
Q106	8-729-230-49 s	TRANSISTOR 2SC2712-YG
Q107	8-729-216-22 s	TRANSISTOR 2SA1162-G
Q108	8-729-230-49 s	TRANSISTOR 2SC2712-YG
Q109	8-729-230-49 s	TRANSISTOR 2SC2712-YG
Q110	8-729-230-49 s	TRANSISTOR 2SC2712-YG
Q111	8-729-230-49 s	TRANSISTOR 2SC2712-YG
Q112	8-729-230-49 s	TRANSISTOR 2SC2712-YG
Q113	8-729-230-49 s	TRANSISTOR 2SC2712-YG
Q114	8-729-901-00 s	TRANSISTOR DTC124EK
Q115	8-729-901-00 s	TRANSISTOR DTC124EK
Q116	8-729-901-00 s	TRANSISTOR DTC124EK
Q117	8-729-901-00 s	TRANSISTOR DTC124EK

(SV-123 BOARD)

Ref. No. or Q'ty	Part No.	SP Description
Q118	8-729-901-00 s	TRANSISTOR DTC124EK
Q119	8-729-901-00 s	TRANSISTOR DTC124EK
R104	1-216-683-11 s	METAL, CHIP 22K 0.5% 1/10W
R107	1-216-687-11 s	METAL, CHIP 33K 0.5% 1/10W
R108	1-216-687-11 s	METAL, CHIP 33K 0.5% 1/10W
R111	1-216-695-11 s	METAL, CHIP 68K 0.5% 1/10W
R112	1-216-683-11 s	METAL, CHIP 22K 0.5% 1/10W
R113	1-216-692-11 s	METAL, CHIP 51K 0.5% 1/10W
R116	1-216-687-11 s	METAL, CHIP 33K 0.5% 1/10W
R117	1-216-673-11 s	METAL, CHIP 8.2K 0.5% 1/10W
R119	1-216-679-11 s	METAL, CHIP 15K 0.5% 1/10W
R122	1-216-043-00 s	METAL, CHIP 560 5% 1/10W
R123	1-216-691-11 s	METAL, CHIP 47K 0.5% 1/10W
R124	1-216-696-11 s	METAL, CHIP 75K 0.5% 1/10W
R131	1-216-651-11 s	METAL, CHIP 1K 0.5% 1/10W
R134	1-216-662-11 s	METAL, CHIP 3K 0.5% 1/10W
R146	1-216-651-11 s	METAL, CHIP 1K 0.5% 1/10W
R149	1-216-662-11 s	METAL, CHIP 3K 0.5% 1/10W
RV101	1-241-632-11 s	RES, ADJ, CARBON 47K
RV102	1-241-632-11 s	RES, ADJ, CARBON 47K
RV103	1-238-017-11 s	RES, ADJ, CARBON 22K
RV104	1-238-017-11 s	RES, ADJ, CARBON 22K
SW101	1-570-602-11 s	SWITCH, DIP 2-CKT
X101	1-579-064-11 s	VIBRATOR, CRYSTAL

SW-420 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-637-270-11 o	PC BOARD, SW-420
CN8	1-946-966-11 o	HARNES (SW)
CN9	1-506-469-11 s	PIN, CONNECTOR 4P
D49	8-719-911-19 s	DIODE 1SS119
D50	8-719-911-19 s	DIODE 1SS119
D51	8-719-911-19 s	DIODE 1SS119
D52	8-719-911-19 s	DIODE 1SS119
S28	1-554-937-11 s	SWITCH, KEY BOARD
S29	1-554-937-11 s	SWITCH, KEY BOARD
S30	1-554-937-11 s	SWITCH, KEY BOARD
S31	1-554-937-11 s	SWITCH, KEY BOARD

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

SW-426 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-637-279-11	o PC BOARD, SW-426
CN1	1-506-471-11	s CONNECTOR, 6P, MALE
R1	1-249-418-11	s CARBON 1.2K 5% 1/4W
R2	1-249-418-11	s CARBON 1.2K 5% 1/4W
R3	1-249-418-11	s CARBON 1.2K 5% 1/4W
R4	1-249-418-11	s CARBON 1.2K 5% 1/4W
S1	1-554-970-11	s SWITCH, SLIDE

SY-155B BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	A-7850-848-A	o COMPLETE PCB, SY-155B
(This assembly includes the following parts.)		
2pcs	1-526-660-21	s SOCKET, IC (DP) 32P
1pc	1-526-950-11	o SOCKET, IC 64P
1pc	1-540-080-11	s SOCKET, IC (IC113) 68P
1pc	2-355-254-01	s SPACER (A), LCD
6pcs	3-330-034-01	s WASHER
6pcs	4-861-614-61	o HOLDER, PC BOARD
1pc	4-924-029-11	s WASHER
6pcs	4-928-330-01	o NUT (M2.6) (JIS 3), HEXAGON
6pcs	7-621-773-95	s SCREW +B 2.6X6
6pcs	7-682-903-11	s SCREW +PWH 3X6
BT1	1-528-229-11	o BATTERY, LITHIUM CR-2450
C3	1-163-127-00	s CERAMIC, CHIP 270PF 5% 50V
C7	1-126-157-11	s ELECT 10uF 20% 16V
C8	1-130-495-00	s MYLAR 0.1uF 5% 50V
C12	1-125-447-11	s DOUBLE LAYERS 1FARAD 5.5V
C13	1-125-447-11	s DOUBLE LAYERS 1FARAD 5.5V
C19	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C20	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C21	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C22	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C23	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C24	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C25	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C26	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C27	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C28	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C29	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C30	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C31	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C32	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C33	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C34	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C35	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C36	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C37	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C38	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C39	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C40	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C41	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C42	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C43	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C44	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C45	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C46	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C47	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C48	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C49	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C50	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C51	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C52	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C53	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C54	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C55	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V
C57	1-164-004-11	s CERAMIC, CHIP 0.1uF 10% 25V

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

PCM-7030 (J,UC,EK)

(SY-155B BOARD)

Ref. No. or Q'ty	Part No.	SP Description
C58	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C59	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C60	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C61	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C62	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C63	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C64	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C65	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C66	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C67	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C68	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C69	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C70	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C71	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C72	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C74	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C75	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
C76	1-164-004-11 s	CERAMIC, CHIP 0.1uF 10% 25V
CN1	1-564-706-11 o	PIN HEADER, STRAIGHT 4P
CN2	1-506-475-11 s	CONNECTOR, 10P, MALE
CN3	1-506-473-11 s	CONNECTOR, 8P, MALE
CN4	1-506-473-11 s	CONNECTOR, 8P, MALE
CN5	1-506-473-11 s	CONNECTOR, 8P, MALE
CN6	1-506-471-11 s	CONNECTOR, 6P, MALE
CN7	1-506-479-11 s	PIN, CONNECTOR 14P
CN8	1-506-475-11 s	CONNECTOR, 10P, MALE
CN9	1-562-883-11 o	CONNECTOR, FPC 20P, FEMALE
CN10	1-562-883-11 o	CONNECTOR, FPC 20P, FEMALE
CN11	1-562-993-11 o	SOCKET, CONNECTOR 30P
CN12	1-562-993-11 o	SOCKET, CONNECTOR 30P
CN13	1-563-335-11 s	CONNECTOR, DIN 48P, FEMALE
CN14	1-563-335-11 s	CONNECTOR, DIN 48P, FEMALE
CN15	1-563-335-11 s	CONNECTOR, DIN 48P, FEMALE
D1	8-719-981-01 s	DIODE ERA81-004
D2	8-719-981-01 s	DIODE ERA81-004
D3	8-719-981-01 s	DIODE ERA81-004
D4	8-719-981-01 s	DIODE ERA81-004
D5	8-719-800-56 s	DIODE TLUR164
D6	8-719-800-56 s	DIODE TLUR164
D7	8-719-800-26 s	DIODE TLUG164
D8	8-719-938-68 s	DIODE GL3HY8
D9	8-719-938-68 s	DIODE GL3HY8
D10	8-719-938-68 s	DIODE GL3HY8
D11	8-719-800-26 s	DIODE TLUG164
D12	8-719-800-56 s	DIODE TLUR164
D13	8-719-800-56 s	DIODE TLUR164
D14	8-719-800-56 s	DIODE TLUR164
D15	8-719-800-26 s	DIODE TLUG164
D16	8-719-981-01 s	DIODE ERA81-004
FB1	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB2	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB3	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB4	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB5	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB6	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB7	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB8	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB9	1-543-622-11 s	BEAD, FERRITE (CHIP)

(SY-155B BOARD)

Ref. No. or Q'ty	Part No.	SP Description
FB10	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB11	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB12	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB13	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB14	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB15	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB16	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB17	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB18	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB19	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB20	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB21	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB22	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB23	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB24	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB25	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB26	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB27	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB28	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB29	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB30	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB31	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB32	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB33	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB34	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB35	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB36	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB37	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB38	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB39	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB40	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB41	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB42	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB43	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB44	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB45	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB46	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB47	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB48	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB49	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB50	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB51	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB52	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB53	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB54	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB55	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB56	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB57	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB58	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB59	1-543-622-11 s	BEAD, FERRITE (CHIP)
FB60	1-543-622-11 s	BEAD, FERRITE (CHIP)
ICA4	8-759-209-05 s	IC TMP82C79P-2
ICA5	8-759-926-77 s	IC SN74HC541ANS
ICA6	8-759-926-49 s	IC SN74HC245ANS
ICB5	8-759-926-77 s	IC SN74HC541ANS
ICB6	8-759-926-49 s	IC SN74HC245ANS
ICC1	8-759-151-04 s	IC UPD43256AGU-10LL

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

(SY-155B BOARD)

Ref. No. or Q'ty	Part No.	SP Description
ICC2	8-759-151-04 s	IC UPD43256AGU-10LL
ICC3	8-759-183-93 s	IC 27C010-IFC3V4.1
ICC4	8-759-183-94 s	IC 27C010-IFC4V4.1
ICC6	8-759-926-77 s	IC SN74HC541ANS
ICD3	8-759-929-77 s	IC SN74LS03NS
ICD6	8-759-926-77 s	IC SN74HC541ANS
ICD1A	8-759-927-46 s	IC SN74HC00ANS
ICD1B	8-759-927-46 s	IC SN74HC00ANS
ICE6	8-759-926-77 s	IC SN74HC541ANS
ICF2	8-759-151-34 s	IC UPD70216L-10
ICF4	8-759-505-42 s	IC CXD8139AQ
ICF5	8-759-149-10 s	IC UPD4702G
ICF6	8-759-926-77 s	IC SN74HC541ANS
ICG1	8-759-149-09 s	IC UPD71059GB-10-3B4
ICG3	8-759-205-37 s	IC TC74HC574F
ICG4	8-759-925-85 s	IC SN74HC32ANS
ICG5	8-759-926-77 s	IC SN74HC541ANS
ICG6	8-759-926-76 s	IC SN74HC540ANS
ICH1	8-759-149-09 s	IC UPD71059GB-10-3B4
ICH2	8-759-926-06 s	IC SN74HC126NS
ICH3A	8-759-205-37 s	IC TC74HC574F
ICH3B	8-759-926-77 s	IC SN74HC541ANS
ICH4A	8-759-925-76 s	IC SN74HC08ANS
ICH4B	8-759-925-90 s	IC SN74HC74ANS
ICH5A	8-759-925-74 s	IC SN74HC04ANS
ICH5B	8-759-008-57 s	IC MC34051P
ICJ2	8-759-926-29 s	IC SN74HC175ANS
ICJ5	8-759-183-87 s	IC 27C256A-SCCKV1.0
ICJ6	8-759-151-35 s	IC CXD8130Q
ICJ1A	8-759-149-07 s	IC UPD71054GB-10-3B4
ICJ1B	8-759-149-07 s	IC UPD71054GB-10-3B4
ICJ4A	8-759-926-11 s	IC SN74HC138ANS
ICJ4B	8-759-925-85 s	IC SN74HC32ANS
ICK2	8-759-973-71 s	IC TL7705CPS-B
ICK3	8-759-153-31 s	IC UPD78C11ACW-F08
ICK4	8-759-149-05 s	IC UPD71051GB-10-3B4
ICK5	8-759-183-87 s	IC 27C256A-SCCKV1.0
ICK6	8-759-151-35 s	IC CXD8130Q
ICL4A	8-759-926-49 s	IC SN74HC245ANS
ICL4B	8-759-926-80 s	IC SN74HC573ANS
L1	1-412-533-11 s	COIL 47uH
L2	1-412-533-11 s	COIL 47uH
L3	1-412-533-11 s	COIL 47uH
R9	1-249-390-11 s	CARBON 5.6 5% 1/4W
RB1	1-231-410-00 s	RESISTOR BLOCK 10Kx8
RB2	1-231-410-00 s	RESISTOR BLOCK 10Kx8
RB3	1-231-410-00 s	RESISTOR BLOCK 10Kx8
RB4	1-231-405-00 s	RESISTOR BLOCK 1K
RB6	1-231-410-00 s	RESISTOR BLOCK 10Kx8
RB8	1-231-410-00 s	RESISTOR BLOCK 10Kx8
RB9	1-231-410-00 s	RESISTOR BLOCK 10Kx8
RB10	1-231-410-00 s	RESISTOR BLOCK 10Kx8
RB11	1-231-410-00 s	RESISTOR BLOCK 10Kx8
RB12	1-231-410-00 s	RESISTOR BLOCK 10Kx8
RB13	1-231-410-00 s	RESISTOR BLOCK 10Kx8

(SY-155B BOARD)

Ref. No. or Q'ty	Part No.	SP Description
RB14	1-231-410-00 s	RESISTOR BLOCK 10Kx8
RB15	1-231-410-00 s	RESISTOR BLOCK 10Kx8
RB16	1-231-410-00 s	RESISTOR BLOCK 10Kx8
SW1	1-552-539-00 s	SWITCH, TACTILE
SW3	1-570-728-11 s	SWITCH, DIP
SW5	1-570-728-11 s	SWITCH, DIP
SW6	1-570-602-11 s	SWITCH, DIP 2-CKT
X1	1-577-110-11 s	VIBRATOR, CRYSTAL
X2	1-567-862-11 s	CRYSTAL, 4.9152MHZ
X3	1-527-848-00 s	OSCILLATOR, CRYSTAL
X4	1-567-867-11 s	CRYSTAL, 14.500MHZ

VR-109 BOARD

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-637-284-13 o	PC BOARD, VR-109
CN1	1-506-470-11 s	CONNECTOR, 5P, MALE
CN2	1-506-470-11 s	CONNECTOR, 5P, MALE

NOTE : Please see pages E-27 for the parts that
are not listed in the parts list.

PCM-7030 (JUC,EK)

FRAME

Ref. No.
or Q'ty Part No. SP Description

MAIN OVERALL ASSY

- Δ 1-450-293-11 s TRANSFORMER, POWER
- Δ 1-532-285-11 s FUSE, TIME LAG (For EK)
- Δ 1-532-825-11 s FUSE, GLASS TUBE (For J, UC)
- 1-590-305-11 s WIRE, FLEXIBLE CARD (30P)
- Δ 1-946-797-11 s HARNESS, SUB (PS)
- 1-562-286-11 o HOUSING, CONNECTOR 5P
- 1-570-117-21 s SWITCH, SEESAW (AC POWER)
- 1-562-169-11 o RECEPTACLE
- 1-562-253-00 o HOUSING, 3P
- 1-562-254-00 o HOUSING, 4P
- 1-562-255-00 o HOUSING, 5P
- 1-562-256-00 o HOUSING, 6P
- 1-562-258-00 o HOUSING, CONNECTOR 10P
- 1-562-259-00 o HOUSING, CONNECTOR 12P
- 1-562-260-11 o CONTACT, SOCKET
- 1-569-191-11 o TERMINAL, SOLDERLESS
- 1-569-193-11 o TERMINAL, SOLDERLESS
- 1-569-196-11 o HOUSING, CONNECTOR 3P
- 1-569-196-41 o HOUSING, CONNECTOR 3P
- 1-569-197-11 o HOUSING, CONNECTOR 4P
- 1-569-198-11 o HOUSING, CONNECTOR 5P
- 1-569-198-21 o HOUSING, CONNECTOR 5P
- 1-569-199-11 o HOUSING, CONNECTOR 6P
- 1-569-199-21 o HOUSING, CONNECTOR 6P
- 1-569-199-31 o HOUSING, CONNECTOR 6P
- 1-569-199-41 o HOUSING, CONNECTOR 6P
- 1-569-200-11 o HOUSING, CONNECTOR 7P
- 1-569-200-31 o HOUSING, CONNECTOR 7P
- 1-569-200-41 o HOUSING, CONNECTOR 7P
- 1-569-201-11 o HOUSING, CONNECTOR 8P
- 1-569-201-31 o HOUSING, CONNECTOR 8P
- 1-569-201-41 o HOUSING, CONNECTOR 8P
- 1-569-203-11 o HOUSING, CONNECTOR 10P
- 1-569-203-21 o HOUSING, CONNECTOR 10P
- 1-569-203-31 o HOUSING, CONNECTOR 10P
- 1-569-203-41 o HOUSING, CONNECTOR 10P
- 1-569-205-11 o HOUSING, CONNECTOR 12P
- 1-569-205-31 o HOUSING, CONNECTOR 12P
- 1-569-205-41 o HOUSING, CONNECTOR 12P
- 1-569-206-31 o HOUSING, CONNECTOR 13P
- 1-569-206-41 o HOUSING, CONNECTOR 13P
- 1-569-207-11 o HOUSING, CONNECTOR 14P
- 1-569-207-41 o HOUSING, CONNECTOR 14P
- 8-835-205-01 o MOTOR, DC U-2A
- 8-835-206-01 s MOTOR, DC BHF-2803A
- 8-848-548-11 s DRUM ASSY DOH-14A.

MD ASSY

- 1-590-303-11 s WIRE, FLEXIBLE CARD (13P)
- 1-590-306-11 s WIRE, FLEXIBLE CARD (36P)
- 1-590-308-11 s WIRE, FLEXIBLE CARD (20P)
- 1-808-281-52 s SENSOR
- 1-946-958-11 o HARNESS (CAP)

CONTOROL MOTOR ASSY

- 1-464-724-11 s ENCODER, ROTARY

GUIDE (L) BLOCK ASSY

NOTE : Please see pages E-27 for the parts that are not listed in the parts list.

(FRAME)

Ref. No.
or Q'ty Part No. SP Description

- 1-161-055-00 s CERAMIC 0.022uF 10% 50V
- 1-541-560-11 s MOTOR, DC
- 1-570-771-11 s SWITCH
- 1-569-193-11 o TERMINAL, SOLDERLESS
- 1-569-198-11 o HOUSING, CONNECTOR 5

CONNECTOR PANEL SUB ASSY

- 1-946-959-11 o HARNESS (RM)
- 1-946-960-11 o HARNESS (9P)
- 1-946-961-12 o HARNESS (FS)
- 1-569-193-11 o TERMINAL, SOLDERLESS
- 1-569-196-11 o HOUSING, CONNECTOR 3P
- 1-569-197-11 o HOUSING, CONNECTOR 4P
- 1-569-197-21 o HOUSING, CONNECTOR 4P
- 1-569-199-11 o HOUSING, CONNECTOR 6P
- 1-569-200-11 o HOUSING, CONNECTOR 7P
- 1-569-201-11 o HOUSING, CONNECTOR 8P

REAR PANEL ASSY

- 1-413-612-11 s SWITCHING REGULATOR
- Δ 1-946-795-13 s HARNESS, SUB (AC IN)
- Δ 1-946-796-11 s HARNESS, SUB (VS)
- Δ 1-562-210-11 s CONTACT, CONNECTOR
- 1-562-211-11 o HOUSING, CONNECTOR 3P
- Δ 1-562-285-11 o HOUSING, CONNECTOR 4P
- Δ 1-562-833-11 o HOUSING, CONNECTOR 7P
- 1-562-210-11 s CONTACT, CONNETOR
- 1-562-287-11 o HOUSING, CONNECTOR 6P

VR-109 ASSY

- 1-241-332-11 s RES, VAR, CARBON 20K

HP-48 ASSY

- 1-241-331-11 s RES, VAR, CARBON 10K/10K
- 1-507-863-51 s JACK, PHONE

SP,SY-A ASSY

- 1-590-307-11 s WIRE, FLEXIBLE CARD (20P)

CASSETTE ILLUMINATION ASSY

- 1-569-193-11 o TERMINAL, SOLDERLESS
- 1-569-197-11 o HOUSING, CONNECTOR 4P
- 8-719-820-27 s LED TLY-256, YEL11.

ENCORDER ASSY

- 1-466-469-11 s ROTARY ENCORDER

ACCESSORIES SUPPLIED

Ref. No.
or Q'ty Part No. SP Description

- A1-534-754-00 s CORD, POWER (For J)
- A1-590-910-11 s CORD, POWER (For EK)
- A1-557-377-11 s CORD, POWER (For UC)

NOTE : Please see pages E-27 for the parts that
are not listed in the parts list.
PCM-7030 (J,UC,EK)